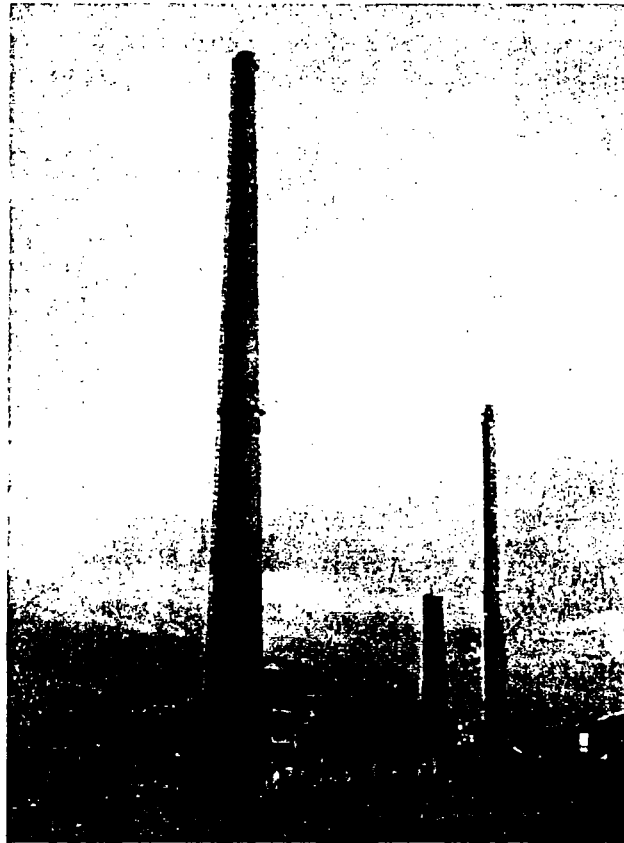

**BID SOLICITATION AND
CONSTRUCTION DOCUMENTS**

**2007 CLEANING & DEMOLITION PROJECT AND
CAMU – PHASE 2 CELL PROJECT**

**ASARCO EAST HELENA PLANT
EAST HELENA, MONTANA**



Hydrometrics, Inc.
consulting scientists and engineers

JANUARY 2007

**BID SOLICITATION
AND
CONSTRUCTION DOCUMENTS**

FOR

**2007 CLEANING & DEMOLITION PROJECT
AND
CAMU - PHASE 2 CELL PROJECT**

**ASARCO EAST HELENA PLANT
EAST HELENA, MONTANA**

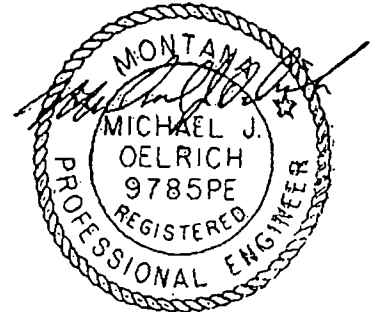
Contact(s):

Blaine Cox/Jon Nickel
ASARCO LLC
(406) 227-4098 (Blaine Cox)
(406) 227- 4529 Phone (Jon Nickel)
(406) 227-2256 FAX

Address:

P.O. Box 1230
East Helena, MT 59635

January 2007



**BID SOLICITATION
AND
CONSTRUCTION DOCUMENTS
FOR
2007 CLEANING & DEMOLITION PROJECT
AND
CAMU - PHASE 2 CELL PROJECT

ASARCO EAST HELENA PLANT
EAST HELENA, MONTANA**

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SECTION I

SECTION I

INTRODUCTION

SECTION I

INTRODUCTION

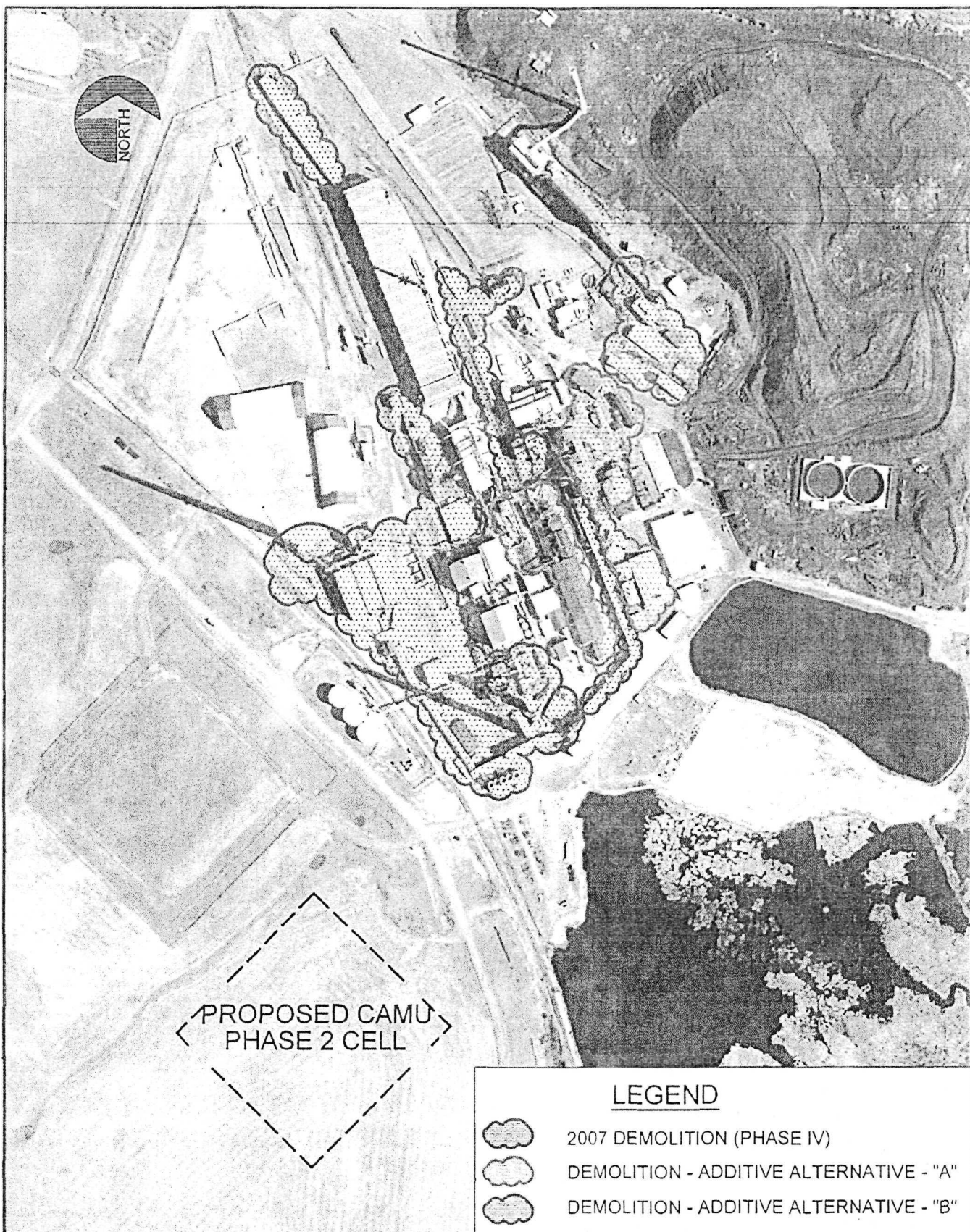
The 2007 Cleaning & Demolition Project and CAMU Phase 2 Cell Project are to take place at the Asarco East Helena Plant in 2007, and will be awarded as one contract. The East Helena Plant is an inactive lead smelter owned by ASARCO LLC. As shown in Figure 1, cleaning and demolition will occur within the plant boundaries, while construction of the Corrective Action Management Unit (CAMU) Phase 2 Cell, which will be used for disposal of waste and demolition debris, is located just across a county road and a railroad track from the facility. The CAMU Phase 2 Cell is a RCRA Class C type of landfill facility. The project will involve construction of the landfill cell, cleaning and demolition of plant structures, transport of waste materials and demolition debris to the landfill, placement and compaction of materials in the landfill, and closure of the landfill.

A legally binding Consent Decree between Asarco and the Montana Department of Environmental Quality (MDEQ) governs the process in which materials are to be removed, stored, and properly disposed or recycled from certain process units located at the East Helena Plant. Over the last three years, Asarco has achieved substantial success in accomplishing these goals, but not all of the tasks are complete. The 2007 Cleaning & Demolition Project builds upon Asarco's past efforts.

The 2007 Cleaning & Demolition Project is first and foremost a materials removal project followed by a demolition project. Protection of human health and the environment continues as the prime objective. With this purpose in mind, the Contractor must implement techniques and material removal procedures to achieve the cleaning criteria before demolition takes place. Once the cleaning process is complete and meets the standards set forth in the Consent Decree, demolition will be allowed to take place.

The specific cleaning techniques selected by the contractor will be designed to minimize environmental and employee exposure to hazardous materials, while meeting the goals and objectives of the Consent Decree. The cleaning of building interiors will be accomplished primarily through the use of shovels, brooms, and industrial vacuums. Contractor crews may use man lifts and ladders to access high areas and must work in an efficient top down fashion to remove accumulated dust and debris. The work must proceed methodically from one end of each building interior to the other until the entire interior space has been cleaned. The intent of cleaning the building interiors is to reduce the potential for fugitive dust emissions during the demolition and dismantling phase. This cleaning is not intended to independently satisfy the precise cleaning requirements prescribed in the Consent Decree. Rather, this preliminary decontamination operation will remove the bulk of accumulated dust from within the buildings. The remaining residues will be managed during the demolition using dust control measures, and after the demolition process with cleaning of the remaining slabs and foundations.

Asarco recognizes that the hardened physical state and/or physical building constraints (e.g. tight and confined spaces) will limit the effectiveness of conventional cleaning methods. Regardless,



ASARCO LLC - EAST HELENA PLANT
2007 CLEANING & DEMOLITION PROJECT
AND CAMU PHASE 2 CELL PROJECT

LOCATION MAP

FIGURE

1

the Contractor must utilize best efforts cleaning techniques to remove accumulated materials. Asarco will identify the structures in which cleaning prior to demolition will occur. Asarco will provide oversight and guidance to the Contractor throughout the cleaning process.

Cleaning and demolition of the site has been broken into several phases, stages, and alternative bid items. Phases I through III of cleaning have already been accomplished. Waste material and demolition debris from these phases are stockpiled in various locations on the plant and will be transported to the CAMU Phase 2 Cell for disposal under this project. Phase IV of cleaning and demolition, which is included as part of this project, is divided into two stages. Stage 1 includes the cleaning and demolition of the:

- Contractor's Lunchroom
- Contractor's Change Room
- Highline Railroad
- Main Office
- Garage
- Main Natural Gas (N.G.) Valve House
- Baghouse and 200-foot Stack
- Charge Building
- Remainder of the Blast Furnace Building and
- Thawhouse.

Associated structures or components may be included as shown on the site plans and presented during the site walk. Stage 1 cleaning will be completed first in order to allow construction of a seepage barrier, which is being accomplished under a separate contract. Stage 1 cleaning will also provide brick and concrete that can be crushed to produce cushion material for protection of the landfill liner system, which is to be constructed as part of the CAMU Phase 2 Cell Project.

Stage 2 cleaning may start after Stage 1 is completed and will include the cleaning and demolition of the:

- Blast Furnace Flue
- Truck loading and Spray Dryer Buildings
- Acid Plant Cooling Towers
- Sand Filters
- 400-foot D&L Stack
- 200-foot Acid Stack
- Acid Plant
- Monier Flue
- Blast Furnace Baghouse
- 425-foot Blast Furnace Stack
- Ore Unloading Building
- Sample Mill and
- Crushing Mill.

Structures or components associated with these facilities may be included as shown on the site plans and presented during the site walk.

Two Additive Alternatives for cleaning and demolition have been incorporated into the 2007 Cleaning & Demolition Project. Bids for the cleaning, demolition, and capping of these Additive Alternatives should be included on submitted bid forms. Once bids are received, ASARCO LLC will determine, based on funding, whether or not to carry out this part of the project in 2007.

Additive Alternative A will include cleaning and demolition of the following structures:

- The remainder of the Highline Railroad
- Locomotive Crane Shed
- B.F. Office
- B.F. Lunchroom
- Power House
- Pump House
- Blast Furnace Heat Exchanger
- Blacksmith Shop
- Machine Shop
- Carpenter Shop
- Direct Smelt Building
- Abandoned Breaking Floor
- Breaking Floor
- Sinter Stockpile Building and
- All associated stacks

Additive Alternative B will include cleaning and demolition of the following structures:

- Masons Shop
- High Lead Welding Shop
- Motor and Paint Shop
- Oil HS
- Paint Storage Building
- Refractory Storage
- Meeting Room and
- Zinc Plant O₂ Building.

Structures or components associated with these facilities may be included as shown on the site plans and presented during the site walk.

The 2007 Cleaning & Demolition Project will include all activities necessary to safely clean and demolish all buildings and structures within this project, clean and recycle all recyclable materials, properly dispose of both non-hazardous and hazardous materials that are included in the structures listed above or are listed in the project documents, remove all residue and dust from remaining foundations and slabs, and backfill, grade, and cap all building footprints within the demolition areas. Additional associated activities and materials necessary to complete the project are presented in this document.

Construction of the CAMU Phase 2 Cell will include all activities necessary to safely construct a RCRA type C landfill cell; load, transport, place and compact waste materials and construction debris in the cell; provide closure of the cell at the end of the construction season; and construct associated surface water and erosion controls. Additional associated activities and materials necessary to complete the construction of the CAMU Phase 2 Cell are presented in this document.

PROJECT ORGANIZATION

The project organization will include personnel from the following functional areas:

Regulatory Oversight

Both EPA and Montana DEQ have regulatory oversight authority for this project and may have personnel on site providing input for the project through Asarco or Asarco's representative.

Project Administration and Control

Asarco will administer this contract and will maintain ultimate control of the project in accordance with the provisions of the Agreement. However, Hydrometrics, Inc. will respond to questions and comments during the bidding period.

Design and Construction Oversight

Hydrometrics, Inc. prepared the project designs and is responsible for its technical content. Asarco plans to retain Hydrometrics or another engineering firm (Engineer) to provide oversight and quality assurance during construction of the CAMU Phase 2 Cell. The Engineer will be on site during construction and will be monitoring construction standards in accordance with the project Drawings and Specifications (Plans). Asarco will provide oversight for cleaning and demolition.

Cleaning, Demolition and Construction

Asarco plans to award this contract to a construction contractor who will assume responsibility for cleaning and demolition of East Helena Plant facilities, capping of the plant following demolition, and construction of a landfill for disposal of waste and demolition debris.

END OF SECTION

SECTION II

SECTION II
INSTRUCTIONS TO BIDDERS

SECTION II
INSTRUCTIONS TO BIDDERS

Reference: 2007 Cleaning & Demolition Project and the CAMU Phase 2 Cell Project

PART 1 - GENERAL

Sealed Bids for the 2007 Cleaning & Demolition Project and CAMU Construction Project will be received by ASARCO LLC, P.O. Box 1230, East Helena, Montana 59635 (or physical address at 100 Smelter Road, East Helena, Montana 59635, ph: (406) 227-4098) according to the following schedule:

Sealed Bid for Project:

Date & Time Due

Three (3) hard copies and one (1) electronic copy (on CD)
of the Bid Submittal including -

03/02/07 3:00 p.m. MST

Part 1: Technical Qualifications & Management Approach

Part 2: Cost Schedule and Bid Forms

Part 3: Asarco Contractor Environmental Safety and Health Screening Questionnaire

Bids received after this time will not be accepted, and will be returned unopened. Bidders assume all risk of late delivery regardless of fault. Verbal, facsimile, or telegraphic bids are invalid and will not receive consideration.

The properly submitted Bids will be opened privately by ASARCO LLC.

PART 2 - DOCUMENTS

Construction Documents for the 2007 Cleaning & Demolition Project and CAMU Phase 2 Cell Project are included with this package. The Asarco Facility Site Environmental Health and Safety Plan is also included as part of this bid solicitation. Each contractor will be responsible for development and submittal of their own Environmental Health and Safety Plan prior to the start of work.

PART 3 - REQUIREMENTS

A pre-bid conference and site tour is mandatory for qualifying bidders. See Part 9 for instructions. Bids shall be submitted in three parts according to the instructions included in Section III and IV of these construction documents.

Part 1: Technical Qualifications & Management Approach

Part 2: Cost Schedule and Bid Forms

Part 3: Asarco Contractor Environmental Safety and Health Screening Questionnaire

The successful Bidder shall have all valid licenses as required by city, county and state laws and regulations.

No Bid may be withdrawn within a period of 45 days after the date Bids are opened.

Please see the Agreement Section for additional requirements.

PART 4 - RESERVATION

The Owner reserves the right to reject any or all Bids, and to waive any informalities or irregularities therein.

PART 5 - DEFINED TERMS

Terms used in these Instructions to Bidders that are defined in the General Provisions of the Contract have the meanings assigned to them in the General Provisions of the Contract. The term "Bidder" means one who submits a Bid directly to Owner, as distinct from a sub-bidder, who submits a Bid to a Bidder. The term "Successful Bidder" means the lowest, qualified, responsible, and responsive Bidder to whom Owner (on the basis of Owner's evaluation as hereinafter provided) makes an award. The term "Bidding Documents" includes the Advertisement or Invitation to Bid, Instructions to Bidders, the Bid Form, and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).

The following terms employed in the Contract Documents shall, for the purpose of this Contract, have the following meanings:

"Contracting Agency" or "Owner" shall mean ASARCO LLC.

"Engineer" or "Project Engineer" shall mean Hydrometrics, Inc., the project designer.

"Owner's Representative" shall mean Hydrometrics, Inc. or other designated ASARCO LLC representative.

"Specifications" shall mean the 2007 Cleaning & Demolition Project and CAMU Phase 2 Cell Project, Plans and Specifications presented in Section VI of this Document.

PART 6 - COPIES OF CONTRACT DOCUMENTS

- A. No partial sets of Bidding Documents will be issued. Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner, Owner's Representative, or Engineer assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- B. Owner and Owner's Representative/Engineer in making copies of Contract Documents available on the above terms do so only for the purpose of obtaining Bids on the work and do not confer a license or grant for any other use.

PART 7 - EXAMINATION OF CONTRACT DOCUMENTS AND SITE

- A. It is the responsibility of each Bidder before submitting a Bid, to: (a) examine the Contract Documents thoroughly, (b) visit the site and become familiar with local conditions that may affect cost, progress, performance, or furnishing of the work, (c) consider federal, state, and local laws and regulations that may affect cost, progress, performance, or furnishing of the work, (d) study and carefully correlate Bidder's observations with the Contract Documents, and (e) notify

- Owner's Representative/Engineer of all conflicts, errors, or discrepancies in the Contract Documents.
- B. It is the responsibility of Bidder to thoroughly review the Agreement prior to submitting a Bid. Bidder will be required to include notification of any exceptions that Bidder takes to any clause in the Agreement with their bid submittal. Bid Forms include an "Acceptance of Agreement" form for bidder signature and submittal with their bid package.
 - C. Additional information about subsurface conditions and additional work at the site is available from the Owner. This information and copies of other such reports and drawings, if any, may be made available by the Owner to any Bidder on request, and upon payment of the cost of reproduction and mailing of such reports and drawings.
 - D. Information and data reflected in the Contract Documents with respect to Aboveground and Underground Facilities at or contiguous to the site are based upon information and data furnished to Owner and Owner's Representative/Engineer by owners of such utilities or others, and Owner does not assume responsibility for the accuracy or completeness thereof unless it is expressly provided otherwise in this document.
 - E. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders on subsurface conditions, Underground Facilities, other physical conditions, and possible changes in the Contract Documents due to differing conditions appear in Sections 104.02 of the Standard Specifications.
 - F. Before submitting a Bid, each Bidder can, at Bidder's own expense, make or obtain any additional examinations, investigations, explorations, tests, studies, and obtain any additional information and data that pertain to the physical conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise that may affect cost, progress, performance, or furnishing of the work and that Bidder deems necessary to determine its Bid for performing and furnishing the work in accordance with the time, price, and other terms and conditions of the Contract Documents.
 - G. On request in advance, Owner will provide each Bidder access to the site to conduct such explorations and tests as each Bidder deems necessary for submission of a Bid. Bidder shall clean up and restore the site to its former condition upon completion of such explorations.
 - H. The lands upon which the work is to be performed, rights-of-way and easements for access thereto, and other lands designated for use by Contractor in performing the work are identified on the photos and drawings included in this Bid Solicitation. All additional lands and access thereto required for temporary construction facilities or storage of materials and equipment are to be provided by Contractor.
 - I. Access to the site may be arranged by contacting Blaine Cox or Jon Nickel at telephone number (406) 227-4098 (Blaine Cox) or (406) 227-4529 (Jon Nickel). In general, site access will be limited to normal weekday working hours.
 - J. The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this section; that without exception the Bid is premised upon performing and furnishing the work required by the Contract Documents and

such means, methods, techniques, sequences or procedures of construction as may be indicated in or required by the Contract Documents; and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance and furnishing of the work.

- K. During the performance of work, the Contractor is responsible for the compliance of all appropriate regulations and environmental health and safety standards.

PART 8 - INTERPRETATIONS AND ADDENDA

- A. All questions about the meaning or intent of the Contract Documents are to be submitted to: Mike Oelrich, P.E., Hydrometrics, Inc., 3020 Bozeman Avenue, Helena, MT 59601, (406) 443-4150, Ext. 179. Replies will be issued only by Addenda. Questions received less than three (3) days prior to the date for opening of Bids may not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.
- B. Addenda may also be issued to modify the Bidding Documents as deemed advisable by Owner or Owner's Representative.
- C. Addenda will be mailed or delivered to all parties recorded by Owner's Representative as having received the Bidding Documents. No Addenda will be issued later than three (3) working days prior to the date for receipt of Bids except an Addendum, if necessary, postponing the date for receipt of Bids or withdrawing the request for Bids.

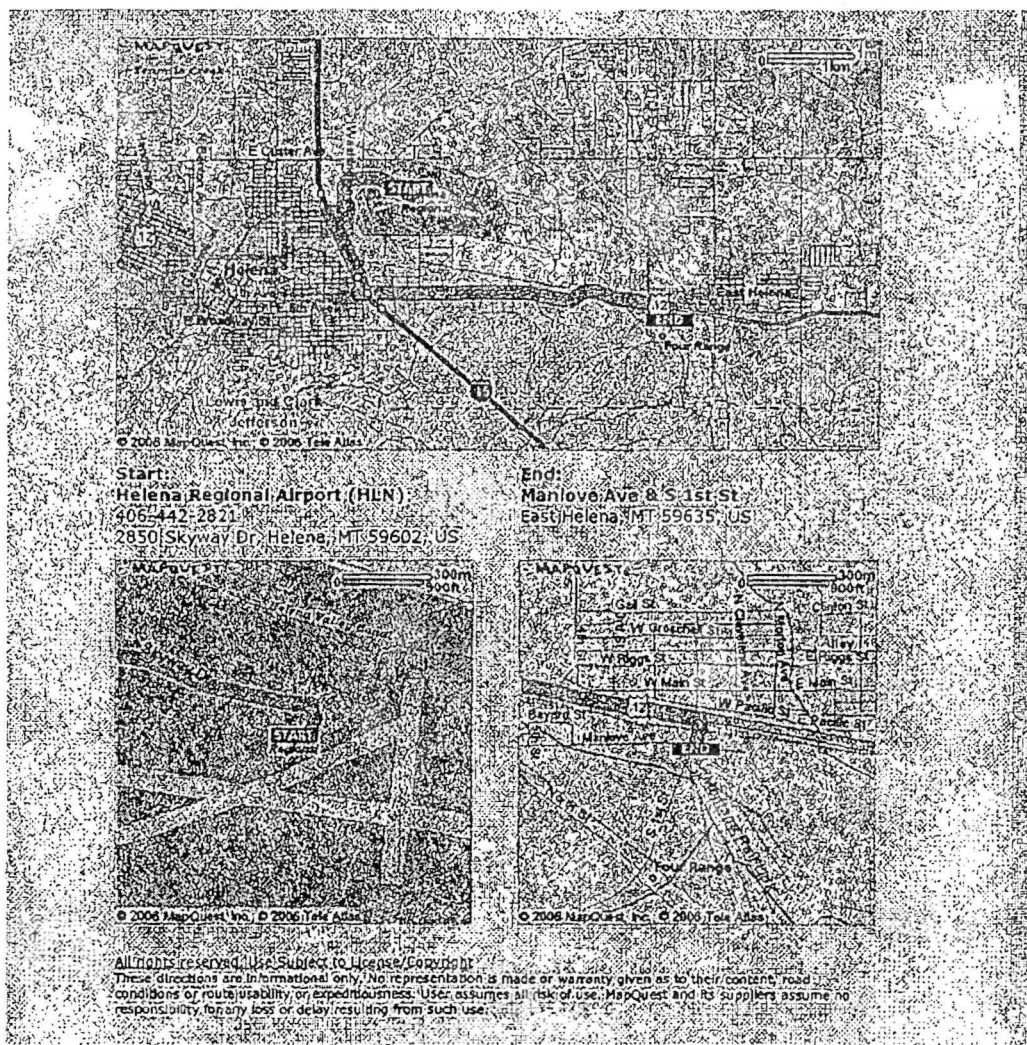
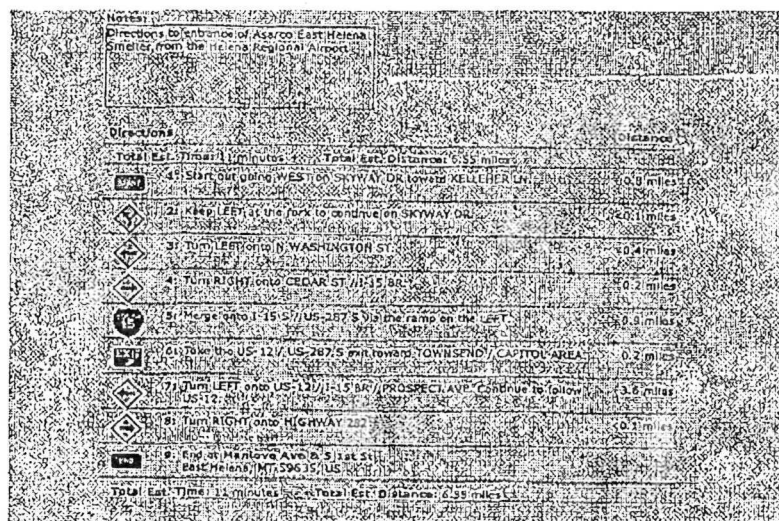
PART 9 - PRE-BID CONFERENCE

- A. A pre-bid conference will be held at the Asarco East Helena Lead Smelter Shop Lunchroom at 8:30 a.m., February 13, 2007. Figure 2 provides directions from the Helena Airport to the Smelter entrance. The Demolition Phase IV Plan Sheet shows the location of Shop Lunchroom and access into the plant from the South contractors gate. The Owner and Owner's Representative will be present to answer questions. Any questions that, in the opinion of the Owner's Representative, cannot be answered by direct reference to the Bidding Documents will be answered by formal written Addenda as outlined above under Interpretations and Addenda.
- B. The pre-bid conference will include a tour of the site and will be conducted by the Owner and Owner's Representative. Attendance is a requirement for qualification of the bidder.
- C. Prebid Conference Schedule:

2007 Cleaning & Demolition Project and CAMU Phase 2 Cell - Prebid Conference Schedule

Location: Shop Lunchroom

Please bring safety gear (hardhat, respirator, safety glasses and work boots) and a good flashlight. Tyvec lab coats will be provided.



Tuesday, February 13, 2007

8:30 a.m. - Introduction and Overview
9:30 a.m. - Plant Tour
10:45 a.m. - CAMU Tour
12:00 p.m. - Lunch (sandwiches provided)
1:00 p.m. - Self Guided Tour (Plant and CAMU)
3:30 p.m. to 4:30 p.m. - Question & Answer (Shop Lunchroom)

Wednesday, February 14, 2007

7:00 a.m. to 3:30 P.M. - Self guided Tour (if necessary)

PART 10 - BASIS OF BIDS

A. The Bidder shall submit prices as required by the Bid Form.

PART 11 - CONTRACT TIME

A. Mandatory schedule milestones for the project are marked by an asterisk (*) in the schedule below. Failure to reach these milestones by the dates shown will result in liquidated damage payments by the Contractor.

Estimated schedule milestones for the Project are also presented below. The estimated milestone dates are the best approximation of the dates the Contractor can expect to perform the construction activities. Start date for demolition is approximate and subject to bankruptcy court and regulatory approvals.

The Project Construction Contractor will need to coordinate his activities with Blaine Cox and Jon Nickel and should verify actual start date of the onsite activities prior to mobilizing his forces. Blaine Cox can be reached at (406) 227-4098 or Jon Nickel can be reached at (406) 227-4529.

Pre-bid Conference and Site Walk Through	02/13/07
Bid Submittal Due including:	03/02/07
Technical Qualifications & Approach	
Cost Schedule and Bid Forms	
Evaluation/Notice of Intent to Award	03/06/07
Contract Negotiation/Execution Complete	03/09/07
Contractor/Asarco meeting with MDEQ ¹	03/16/07
Draft Work Plan(s) submitted to MDEQ	03/23/07
MDEQ Work Plan Approval	03/30/07
Project Start Date	04/01/07
Stage 1 Cleaning & Demolition Project Finish Date*	07/15/07
Stage 2 Cleaning & Demolition Project Finish Date*	10/15/07
CAMU Construction Project Finish Date*	10/15/09
Additive Alternative Bid Items Completion Date*	12/01/07

(1. MDEQ - Montana Department of Environmental Quality)

PART 12 - LIQUIDATED DAMAGES

- A. Provisions for liquidated damages are set forth in the Agreement.

PART 13 - SUBSTITUTE MATERIAL AND EQUIPMENT

- A. Whenever a material or article is specified or described by using the name of a proprietary product or the name of a particular manufacturer or vendor, the specified item mentioned shall be understood as establishing the type, function, and quality desired. Except for those items identified in this document for which substitute material or equipment will not be accepted, other manufacturers' products will be accepted provided sufficient information is submitted to allow Owner's Representative/Engineer to determine that the products submitted are equivalent to those named. Applications for such review will not be considered by Owner's Representative/Engineer until after the "effective date of the Agreement." The procedure for submittal of any such application by Contractor and consideration by Owner's Representative/Engineer is set forth in this document.

PART 14 - BID FORM

- A. The Bid Form is attached hereto; additional copies may be obtained from Owner's Representative. The Bid Form will be modified as required and, if modified, will be issued in its entirety by Addendum.
- B. The Bid Form must be completed in ink or by typewriter. The Bid Total Price on the form must be stated in words and numerals; in case of a conflict, words will take precedence.
- C. Bid by corporations must be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign). The corporate address and state of incorporation shall be shown below the signature.
- D. Bid by partnerships must be executed in the partnership name and signed by a partner, whose title must appear under the signature. The official address of the partnership must be shown below the signature.
- E. Bid by joint ventures shall be signed by each participant in the joint venture or by an authorized agent of each participant.
- F. The names of all persons signing must also be legibly printed or typed below the signature. A Bid by a person who affixes to his signature the word "president," "secretary," "agent," or other designation without disclosing his principal may be held to be the Bid of the individual signing. When requested by Owner, evidence of the authority of the person signing shall be furnished.
- G. The Bid shall contain an acknowledgment of receipt of all Addenda (the numbers of which shall be filled in on the Bid Form).
- H. No alterations in the printed Bid forms therefore, by erasures, interpolations, or otherwise will be accepted.
- I. Show the address to which communications regarding the Bid are to be directed.

PART 15 - SUBCONTRACTOR LISTING

- A. Each Bidder shall list on the form provided: the name and the address of each subcontractor who will perform work or labor or render service to the Bidder in or about the work in an amount in excess of \$10,000; and the portion of the work that will be done by each subcontractor listed.
- B. If a Bidder fails to specify a subcontractor for any portion of the work to be performed under this Contract in excess of \$10,000, he agrees to perform that portion himself. No subcontractor doing work in excess of \$10,000 and who is not listed will be used without the written approval of the Owner.

PART 16 - EQUIPMENT SUPPLIER AND SUBCONTRACTOR LISTING

- A. Each Bidder shall list on the form provided the name of the equipment suppliers and subcontractors (if any) that Bidder will utilize. Upon award of the Contract, the named equipment shall be furnished. Equipment substitutions will be permitted only if named equipment does not meet the Specifications, the manufacturer is unable to meet delivery requirements of the construction schedule, or by mutual agreement of Owner and Contractor. The equipment supplier and subcontractor listing form is part of the Bid Form. Subcontractor substitutions will be permitted only by mutual agreement of Owner and Contractor.
- B. Preliminary acceptance of equipment listed by manufacturer's name shall not in any way constitute a waiver of the Specifications covering such equipment; final acceptance will be based on full conformity with the Specifications covering the equipment.
- C. Failure to furnish all information requested may be cause for rejection of the Bid.

PART 17 - SUBMISSION OF BIDS

- A. Three (3) hard copies and one electronic copy (on CD) of the Contractor's Bid shall be submitted at the time and place indicated in the Instructions to Bidders and shall be included in an opaque sealed envelopes addressed to ASARCO LLC, Attn: Blaine Cox, P.O. Box 1230, East Helena, MT 59635 (or physical address at 100 Smelter Road, East Helena, Montana 59635, ph: (406) 227-4098) and identified on the outside with the Bidder's name and address; the time and date of the Bid opening; and with the words "2007 Cleaning & Demolition Project and CAMU Construction Bid Submittal."
- B. If the Bid is sent by mail, the sealed envelope shall be enclosed in a separate mailing envelope with the following notation: "BID ENCLOSED, 2007 Cleaning & Demolition Project and CAMU Construction." Place this notation in the lower left-hand corner of the envelope.
- C. Bids shall be deposited at the designated location prior to the time and date for receipt of Bids indicated in the Invitation to Bid or the modified time and date indicated by Addendum. Bids received after the time and date for receipt of Bids will be returned unopened. Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids.
- D. Oral, telephone, or FAX Bids are invalid and will not receive consideration. No Bidder may submit more than one Bid. Multiple Bids under different names will not be accepted from one firm or association.

PART 18 - MODIFICATION AND WITHDRAWAL OF BIDS

- A. Bids submitted early may be modified or withdrawn by notice to the party receiving Bids at the place and prior to the time designated for receipt of Bids. Such notice shall be in writing over the signature of the Bidder or be by FAX. If by FAX, written confirmation over the signature of Bidder must have been mailed and postmarked on or before the date and before time set for receipt of Bids; and it shall be so worded as not to reveal the amount of original Bid. Bids may also be modified or withdrawn in person by the Bidder or an authorized representative provided identity and authority can be proven. Withdrawn Bids may be resubmitted up to the time designated for the receipt of Bids provided that they are then fully in conformance with these Instructions to Bidders.
- B. If, within 24 hours after Bids are opened, any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of the Bid, that Bidder may withdraw the Bid. Thereafter, that Bidder will be disqualified from further bidding on the work.

PART 19 - BIDS TO REMAIN OPEN

- A. All Bids shall remain open and subject to acceptance for the period of time specified in the Bid Form.

PART 20 - AWARD OF CONTRACT

- A. Owner reserves the right to reject any and all Bids, to waive any and all informalities, to negotiate Contract terms with the Successful Bidder, and to disregard all nonconforming, non-responsive, unbalanced or conditional Bids. Owner reserves the right to reject the Bid of any Bidder if Owner believes that it would not be in the best interest of the Project to make an award to that Bidder, whether because the Bid is not responsive or the Bidder is unqualified, of doubtful financial ability, or fails to meet any other pertinent standard or criteria established by Owner. Discrepancies between words and figures will be resolved in favor of words. Discrepancies between the indicated sum or product of figures and the correct sum or product thereof will be resolved in favor of the correct or product sum.
- B. Owner reserves the right to reject all Bids if the lowest, responsive Bid exceeds the funds estimated by the Owner to be available.
- C. In evaluating Bids, Owner shall consider the qualifications of the Bidders, whether or not the Bids comply with the prescribed requirements, and alternates and unit prices if requested in the Bid Form.
- D. Owner may consider the qualifications and experience of subcontractors and other persons and organizations including those who are to furnish the principal items of material or equipment. Operating costs, maintenance considerations, performance data, and guarantees of materials and equipment identified in the Contractor Listing may also be considered by Owner.
- E. Owner may conduct such investigations as he deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications, and financial ability of the Bidders,

proposed subcontractors, and other persons and organizations to do the work in accordance with the Contract Documents to Owner's satisfaction within the prescribed time in this Bid Solicitation or Bidder's proposed time.

- F. Owner reserves the right to reject the Bid of any Bidder that does not pass evaluation to Owner's satisfaction.
- G. If the Contract is to be awarded, it will be awarded to the lowest, responsive and responsible, qualified Bidder whose evaluation by Owner indicates to Owner that the award will be in the best interest of the Project.
- H. If the Contract is to be awarded, Owner will give the Successful Bidder a Notice of Award within the time specified in the Bid Form for Bids to remain open.

PART 21 - SIGNING OF AGREEMENT

- A. When Owner gives a Notice of Award to the Successful Bidder, it will be accompanied by unsigned counterparts of the Agreement and all other Contract Documents as required indicated in this document.
- B. Two (2) copies of the Contract Documents will be prepared by the Owner or Owner's Representative/Engineer. All copies will be submitted to Contractor, and Contractor shall execute the Contract Agreement, insert executed copies of the required bonds, power of attorney if applicable, and Certificates of Insurance, and submit all copies to Owner within five (5) days. The date of Contract on the Contract and bond forms and the certification date on the power-of-attorney (if applicable) shall be left blank for filling in by Owner.
- C. Owner will execute all copies, insert the date of Contract on the Contract and bond forms and on the power-of-attorney (if applicable), and transmit all copies to Owner's Representative/Engineer within five (5) days for review and distribution. Distribution of signed copies will be one copy each to Owner, Owner's Representative/Engineer, and Contractor. Contractor shall be responsible for distribution of copies to the Sureties.
- D. There shall be no Contract between Bidder and Owner until the Agreement in the Contract Documents is signed by Owner.

PART 22 - BID TO INCLUDE ALL COSTS

- A. Bidders shall include in their Bid the cost for obtaining and paying for any patent fees, royalties, permits, utilities, taxes, and anything else called out in the Bidding Documents to be obtained and/or paid for by the Contractor.

PART 23 - WORKER ENVIRONMENTAL HEALTH AND SAFETY

- A. It is the Contractor's responsibility for implementing a safety program to protect workers from all environmental safety and health hazards associated with this project. The Contractor is responsible for compliance with all applicable OSHA and safety rules and regulations. Additional environmental health and safety rules, requirements and regulations are in Section IX of this document.

PART 24 - OTHER REQUIREMENTS

- A. Bidder shall inform itself of, and Successful Bidder shall comply with, Federal, State, and local laws, statutes and ordinances relative to the execution of the work. This requirement includes, but is not limited to, applicable regulations concerning minimum wage rates, nondiscrimination in the employment of labor, protection of public and employee safety and health, environmental protection, the protection of natural resources, fire protection, burning and non-burning requirements, permits, fees, and similar subjects.

END OF SECTION

SECTION III

SECTION III

TECHNICAL QUALIFICATIONS & MANAGEMENT APPROACH

SECTION III

TECHNICAL QUALIFICATIONS & MANAGEMENT APPROACH

Plans and Specifications for the 2007 Cleaning & Demolition Project and the CAMU Construction Project were prepared in sufficient detail for contractor bidding; however, additional detail may need to be developed by the contractor. Additional detail related to work activities and coordination with other work activities at the site will be coordinated through ASARCO LLC. The Technical Qualifications and Management Approach submittal allows the proposing contractor to describe how the work will be executed and managed given the design basis provided in the Construction Documents.

As explained previously, bids for the 2007 Cleaning & Demolition Project and the CAMU Construction Project will be received in two parts. The following paragraphs describe the information that should be included in the Part 1: Technical Qualifications & Management Approach submittal. This submittal should be double-spaced and not exceed 30 pages. The Statement of Bidder's Qualifications form, Bidder's Proposed Key Personnel List, Subcontractor Listing, and attached qualifications statements and resumes are considered additional information and will not be included in the 30 page limit.

1. Describe your technical qualifications for the 2007 Cleaning & Demolition Project and the CAMU Construction Project. Detail your experience with specific projects of comparable scope and cost completed in the last four (4) years.
2. Describe the technical approach you would apply to the 2007 Cleaning & Demolition Project and the CAMU Construction Project to cost-effectively complete the project while incorporating necessary changes in the field. Include a description of the equipment and personnel that would be required to execute your approach. Explain your approach for safely cleaning facilities and efficiently demolishing stacks included in the scope of work. Explain how you have successfully demonstrated similar approaches at other projects to manage change and control costs.
3. Describe your role in the construction organization and your approach to interaction and coordination. Explain your Environmental Health and Safety Training Program that will be implemented to Safely and Efficiently complete the scope of work outlined in Section VI – General Provisions.
4. Discuss your proposed methods for transporting waste and debris to the CAMU Phase 2 Cell and explain how they will prevent spread of waste materials and be protective of the environment and human health.
5. Describe your management approach specific to this project. This discussion should include a description of your proposed approach to schedule control, contract administration and negotiation, and the methods you will use to control costs and minimize change orders. It may also include examples of similar management approaches you have used at other sites.

6. Complete the Statement of Bidder's Qualifications on the enclosed form.
7. Provide a List of Key Personnel on the enclosed form and describe their qualifications as they relate to the 2007 Cleaning & Demolition Project and the CAMU Construction Project. Resumes of key personnel should also be included in your submittal.
8. Provide a List of Subcontractors on the enclosed form and describe their qualifications and past experience you have had working together.

STATEMENT OF BIDDER'S QUALIFICATIONS

Reference: 2007 Cleaning & Demolition Project and the CAMU Construction Project

This Document constitutes an Attachment to the Bid Form. The information provided by the Bidder in this Document will be one component Asarco may use to evaluate the Bid. Bidder's qualifications to perform the work are as follows:

1. Name of Bidder:
2. Permanent main office address:
3. When organized?
4. If a corporation, where incorporated?
5. How many years have you been engaged in business under your present firm or trade name?
6. Have you ever failed to complete any work awarded to you? If so, where and why?
7. Have you ever defaulted on a contract? If so, where and why?

Bidder's Initials _____

8. List the similar projects recently completed by your company, stating the approximate cost for each and the month and year completed.
9. Do you have an environmental health and safety program to adequately educate and protect your personnel in working in a hazardous environment in accordance with the requirements specified in OSHA 29 CFR 1910.120(b)(4)?
10. List four references for completed projects (name, address, and phone):
11. Give bank reference:
12. Credit available: \$_____.
13. Bonding Capacity: \$_____.
15. Bonding Company _____.

Bidder's Initials _____

ASARCO LLC

The undersigned hereby authorizes and requests any persons, firm, or corporation to furnish any information requested by ASARCO LLC, in verification of the recitals comprising this Statement of Bidder's Qualifications.

By _____

Title _____

Date _____

BIDDER'S PROPOSED KEY PERSONNEL

Reference: 2007 Cleaning & Demolition Project and the CAMU Construction Project

This Document constitutes an Attachment to the Bid Submittal for Part 1: Technical Qualifications and Management Approach. The information provided by the Bidder in this Document will be one component, which ASARCO LLC may use to evaluate the Bid. Bidder proposes to use the following key personnel to manage the Work. On additional attached and numbered pages, describe key personnel qualifications as they relate to the 2007 Cleaning & Demolition Project and the CAMU Construction Project and attach resumes for each person.

Project Manager	Location of Office	Telephone No.
-----------------	--------------------	---------------

Project Engineer (if applicable)	Location of Office	Telephone No.
----------------------------------	--------------------	---------------

Project Business Manager	Location of Office	Telephone No.
--------------------------	--------------------	---------------

General Superintendent	Location of Office	Telephone No.
------------------------	--------------------	---------------

Note who will be the primary contact at the site and in the home office:

- * Home Office Contact
- ** Site Contact

If titles shown above are not appropriate, adjust as needed.

Bidder's Initials _____

SUBCONTRACTOR LISTING

Reference: 2007 Cleaning & Demolition Project and the CAMU Construction Project

The following information is submitted which gives the name, business address, and portion of the work for each subcontractor that will be used for a portion of the work equal to or exceeding the amount specified in the Instructions to Bidders if the Bidder is awarded the Contract. Additional numbered pages shall be attached to this page as required. Each page shall be headed "SUBCONTRACTOR LISTING" and signed. On additional attached and numbered pages, describe subcontractor qualifications as they relate to the 2007 Cleaning & Demolition Project and the CAMU Construction Project. If applicable, attach resumes for key subcontractor personnel.

SUBCONTRACTOR LISTING	
Name:	
Business Address and City/State/Zip:	
Business Phone:	
Business FAX:	
Contractor License No. (if applicable)	
Approximate Value of Subcontract:	
Work to be Performed Description:	
Describe Past Experience Working with Subcontractor:	
SIGNATURE REQUIRED	

Bidder's Initials _____

END OF SECTION

SECTION IV

SECTION IV

BID FORMS

SECTION IV

BID FORMS

To: ASARCO LLC
P.O. Box 1230
100 Smelter Road
East Helena, MT 59635

Bidder: _____
Address: _____

Attention: Blaine Cox

Reference: 2007 Cleaning & Demolition Project and CAMU Phase 2 Cell Project

THE UNDERSIGNED BIDDER, having familiarized himself with the work and all other requirement required by these Contract Documents, hereby proposes and agrees, if this Bid is accepted, to enter into Agreement with the Owner using the Agreement in Section V. If Bidder takes exception to any clause in the Agreement, a redlined copy of the agreement containing proposed changes is required as an attachment to this bid form.

THE UNDERSIGNED BIDDER ALSO AGREES to perform all work to complete the project. This includes: the assumption of all obligations, duties, and responsibilities necessary for the successful completion of the Contract; the furnishing of all materials and equipment required to be incorporated in and form a permanent part of the work; providing all tools, equipment, supplies, transportation, facilities, labor, superintendence, and services required to perform the work; providing the bonds, insurance, and submittals; all as indicated or specified in the Contract Documents that are required to be furnished by Contractor.

The Total Bid Price of this Proposal shall be the sum of the itemized Bid items on the following Bid Sheets (itemized prices are all inclusive).

The Contract amount shall be the total price of the Cost Schedule. Correct extensions based on the unit prices Bid and the approximate quantities shown are for the comparison of Bids only and Payments for unit priced items will be based on actual quantities measured in accordance with the requirements of the Contract Specifications. Limits of lump sum priced items will be as described in the Contract Drawings and Specifications.

The undersigned has checked the Bid total and understands that the Owner will not be responsible for any errors or omissions on the part of the undersigned in making up this Bid.

In order for the Owner to consider a Bid, all items on the Bid must be filled in completely in ink or typewritten.

The undersigned Bidder agrees to obtain required insurance, and to enter into a Contract within the time specified in the Instructions to Bidders, and further agrees to complete all work covered by the Bid, in accordance with specified requirements, within the time specified in the Agreement.

Bidder's Initials _____

**ASARCO EAST HELENA PLANT
2007 CLEANING & DEMOLITION PROJECT
COST SCHEDULE**

ITEM NO.	DESCRIPTION	LUMP SUMP AMOUNT
1	MOBILIZATION/DEMOLIBIZATION	\$
	CLEANING & DEMOLITION	
	<u>BUILDING/STRUCTURE</u>	
2	Contractor's Lunchroom	\$
3	Contractor's Change room	\$
4	Highline Railroad	\$
5	Main Office	\$
6	Garage	\$
7	Main N.G. Valve House	\$
8	Baghouse and 200-foot Stack	\$
9	Charge Building	\$
10	Blast Furnace (remaining)	\$
11	Blast Furnace Flue	\$
12	Spray Dryer	\$
13	Acid Plant Cooling Towers	\$
14	Sand Filters	\$
15	400-foot D&L Stack	\$
16	200-foot Acid Stack	\$
17	Acid Plant	\$
18	Auto Shop	\$
19	Pump Tank Building	\$
20	Main Blower Building	\$
21	Acid Plant Shop	\$
22	Dust Building	\$
23	Monier Flue	\$
24	Blast Furnace Baghouse	\$
25	425-foot Blast Furnace Stack	\$
26	Ore Unloading Building	\$
27	Sample Mill	\$
28	Crushing Mill	\$
29	Thawhouse	\$
TOTAL 2007 CLEANING & DEMOLITION BID		\$

**ASARCO EAST HELENA PLANT
2007 CAMU PHASE 2 CELL PROJECT
COST SCHEDULE**

ITEM NO.	DESCRIPTION	LUMP SUM AMOUNT
30	Mobilization 2007	\$
31	Access Roads	\$
32	Temporary Erosion and Site Access Controls	\$
33	Excavation & Stockpile	\$
34	Subgrade Preparation, Grade & Compact	\$
35	Compacted Clay Liner	\$
36	HDPE, 60 mil	\$
37	Drainage Geonet, 250 mil	\$
38	Geotextile Construction Fabric	\$
39	Leachate Removal Structures	\$
40	Storm Water Retention Pond	\$
41	Crush and Place Cushion Material	\$
42	Load, Haul, Place & Compact Waste Materials	\$
43	Environmental Health & Safety Requirements 2007	\$
44	Traffic Controls and Road Maintenance 2007	\$
45	Dust Control and Haul Road Maintenance 2007	\$
46	Temporary Cover, RPE 25, Year 2007	\$
47	Permanent Run-on Diversion Ditches	\$
48	Seed, Fertilize, & Mulch - Off Plant	\$
49	Fence with Appurtenances	\$
50	Quality Control Plan and Management	\$
TOTAL CAMU Construction Cost (PRICE IN FIGURES):		\$

ADDITIVE ALTERNATIVE BID ITEMS

ITEM NO.	DESCRIPTION	LUMP SUMP AMOUNT
A	CLEANING & DEMOLITION OF AREA "A" <u>BUILDING/STRUCTURE</u>	
51	Highline Railroad	\$
52	Locomotive Crane Shed	\$
53	B.F. Office	\$
54	B.F. Lunchroom	\$
55	Power House	\$
56	Pump House	\$
57	Blast Furnace Heat Exchanger	\$
58	Blacksmith Shop	\$
59	Machine Shop	\$
60	Carpenter Shop	\$
61	Direct Smelt Building	\$
62	Abandoned Breaking Floor	\$
63	Breaking Floor	\$
64	Sinter Stockpile Building	\$
65	Associated Stacks	\$
B	CLEANING & DEMOLITION OF AREA "B" <u>BUILDING/STRUCTURE</u>	
66	Masons Shop	\$
67	High Lead Welding Shop	\$
68	Motor and Paint Shop	\$
69	Oil HS	\$
70	Paint Storage Building	\$
71	Refractory Storage	\$
72	Meeting Room	\$
73	Zinc Plant O ₂ Building	\$
C	BACKFILL AND CAPPING OF ITEMS 2 - 29	\$
D	BACKFILL AND CAPPING OF ITEMS 51 - 65	\$
E	BACKFILL AND CAPPING OF ITEMS 66 - 73	\$
F	DISPOSE OF MATERIALS IN RINGLING BLDG.	
TOTAL ADDITIVE ALTERNATIVE BID ITEMS		\$

**ASARCO EAST HELENA PLANT
2007 CLEANING & DEMOLITION AND CAMU PHASE 2 CELL PROJECTS
COST SCHEDULE SUMMARY**

DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
2007 CLEANING & DEMOLITION PROJECT				
Project Cost (Price in Figures):				\$
CAMU PHASE 2 CELL PROJECT				
Project Cost (Price in Figures)				\$
ADDITIVE ALTERNATE A				
Cost (Price in Figures):				\$
ADDITIVE ALTERNATE B				
Cost (Price in Figures):				\$
ADDITIVE ALTERNATE C				
Cost (Price in Figures):				\$
ADDITIVE ALTERNATE D				
Cost (Price in Figures):				\$
ADDITIVE ALTERNATE E				
Cost (Price in Figures):				\$
ADDITIVE ALTERNATE F				
Cost (Price in Figures):				\$
TOTAL BID (PRICE IN FIGURES)				
				\$
TOTAL BID (PRICE IN WORDS)				

Receipt of copies of the following addendum(s) is hereby acknowledged.

<u>Addendum No.</u> <u>Acknowledged</u>	<u>Bidder's Signature</u>	<u>Date</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

All addenda received have been considered in preparation of this Bid.

Enclosed herewith is the Equipment Supplier and Subcontractor Listing (if any), and the non-collusion agreement.

In submitting this Bid, it is understood that the right is reserved by Owner to reject any and all Bids, and it is understood that this Bid may not be withdrawn during a period of forty-five (45) days after the scheduled time for the receipt of Bids.

The undersigned Bidder hereby certifies: (a) that this Bid is genuine and is not made in the interest of, or in the behalf of, any undisclosed person, firm, or corporation, and is not submitted in conformity with any agreement or rules of any group, association, organization, or corporation; (b) that Bidder has not directly or indirectly induced or solicited any other Bidder to put in a false or sham Bid; (c) that Bidder has not solicited or induced any person, firm, or corporation to refrain from Bidding; and (d) that Bidder has not sought by collusion to obtain any advantage over any other Bidder or over the Owner.

The Bidder further agrees that he has exercised his own judgment regarding the interpretation of subsurface information and has utilized all data he believes pertinent from the Owner's Representative/Engineer, Owner, and other sources in arriving at his conclusions.

The full names and addresses of parties interested in this Bid as principals are as follows:

Bidder's Initials _____

ASARCO LLC

SIGNATURE OF BIDDER:

Date: _____

If an Individual: _____, doing
business as _____.

If a Partnership: _____
by _____, partner.

If a Corporation: _____
(a _____ Corporation)
by _____

Business Address of Bidder _____

Bidder's Initials _____

ASARCO LLC

If Bidder is a joint venture, other party must sign below.

Date: _____

If an Individual: _____,

doing business as _____.

If a Partnership: _____

by _____, partner.

If a Corporation: _____

(a _____ Corporation)

by _____

Business Address of Bidder _____

Bidder's Initials _____

BIDDER'S PROPOSED CONSTRUCTION SCHEDULE

Reference: 2007 Cleaning & Demolition Project and the CAMU Construction Project

This document constitutes an Attachment to the Bid Form. The information provided by the Bidder in this Document will be one component which ASARCO LLC may use to evaluate the Bid. Bidder proposes the following construction schedule for the major items of the Work. A construction schedule outline in the format of Bidder's choice is attached:

Yes ☐ No ☐

<u>ACTIVITY</u>	<u>START DATE</u>	<u>COMPLETION DATE</u>
2007 Mobilization		
Stage 1 Demolition		
Stage 2 Demolition		
Crushing for Cusion Material		
Access Road Construction		
Cell Excavation		
Compacted Clay Liner Construction		
FML Construction		
Haul Waste Materials to Cell		
Construct CAMU Cap		
CAMU Phase 2 Cell Completion		
Additive Alternatives		
Demobilization		

Bidder's Initials _____

BIDDER'S PROPOSED EQUIPMENT

Reference: 2007 Cleaning & Demolition Project and the CAMU Construction Project

This Document constitutes an Attachment to the Bid Form. The information provided by the Bidder in this Document will be one component, which ASARCO LLC may use to evaluate the Bid. Bidder proposes to use the following equipment for this project:

[illegible]

Bidder's Initials _____

NONCOLLUSION AFFIDAVIT

State of _____
County of _____

Reference: 2007 Cleaning & Demolition Project and the CAMU Construction Project

I state that I am _____ (Title) of _____ (Name of Firm) and that I am authorized to make this affidavit on behalf of this firm and its owners, directors, and officers. I am the person responsible in this firm for the price(s) and the amount of this Bid.

I state that:

1. The price(s) and amount of this Bid have been arrived at independently and without consultation, communication or agreement with any other Contractor, Bidder, or potential Bidder, except as disclosed on the attached appendix.
2. That neither the price(s) nor the amount of this Bid, and neither the approximate price(s) nor approximate amount of this Bid, have been disclosed to any other firm or person who is a Bidder or potential Bidder, and they will not be disclosed before Bid opening.
3. No attempt has been made or will be made to induce any firm or person to refrain from bidding on this Contract, or to submit a Bid higher than this Bid, or to submit any intentionally high or noncompetitive Bid or other form of complementary Bid.
4. The Bid of this firm is made in good faith and not pursuant to any agreement or discussion with, or inducement from, any firm or person to submit a complementary or other noncompetitive Bid.
5. _____ (name of this firm), its affiliates, subsidiaries, officers, directors and employees are not currently under investigation by any governmental agency and have not in the last four years been convicted of or found liable for any act prohibited by State or Federal law in any jurisdiction, involving conspiracy or collusion with respect to bidding on any public contract, except as described in the attached appendix.

I state that _____ (name of this firm) understands and acknowledges that the above representations are material and important, and will be relied on by the Owner in awarding the Contract(s) for which this Bid is submitted. I understand and this firm understands that any misstatement in this affidavit is and shall be treated as fraudulent concealment from ASARCO LLC of the true facts relating to the submission of Bids for this Contract.

SIGNATURE

NAME OF COMPANY/POSITION

Bidder's Initials _____

ASARCO LLC

Sworn to and subscribed before me this _____ day of _____, 2007.

NAME OF NOTARY PUBLIC

Address

City, State and Zip Code

This commission expires _____

Asarco Contractor Environmental Safety and Health Screening Questionnaires

Forms #HSC 001, 002 and 003

(Completed Forms must be attached to bid submittal)

CONTRACTOR ENVIRONMENTAL SAFETY AND HEALTH SCREENING QUESTIONNAIRE #HSC 001

Please complete this form and attach to bid submittal.			
NAME AND ADDRESS OF CONTRACTOR:			
Obtain from your insurance agent (or state fund, if possible) your workers' compensation insurance experience modification rate (EMR) for the three most recent rating periods and complete the following:			
POLICY YEAR:	EMR:	If your EMR is exactly 1.0 for any policy year, is it because your firm is (or was) too new or too small to have an EMR calculated?	
Most recent policy year:		YES: <input type="checkbox"/> NO: <input type="checkbox"/>	
1 year prior:			
2 years prior:			
We require verification of the above information. Any of the following methods will be acceptable:			
a. Furnish a letter from your insurance agent, insurance carrier, or state fund (on their letterhead) verifying the EMR data listed above;			
b. Provide a copy of the last three years' "Experience Rating Calculation Sheets" which your insurance carrier should forward to you annually; or			
c. Provide a copy of the pages of your last three years' insurance policies that show the experience modification rate and the coverage period.			
If you were required to complete OSHA 200-S Reports for the last three years, please attach copies. If you were not required to complete OSHA 200-S Reports, please provide the following information:			
Three previous calendar years:	2004	2005	2006
Number of employees:			
Number of medical treatment cases*:			
Number of lost workday cases**:			
Number of fatalities:			
Exposure hours***:			
Number of lost workdays****:			
DEFINITIONS			
* Medical Treatment Case - A case resulting from a work accident or illness that does not result in lost time or restricted work where the contractor employee receives treatment administered by a physician or by registered personnel under the standard orders of a physician. Medical treatment does not include first-aid cases, even though first aid is administered by a physician or registered professional personnel, but does not include loss of consciousness or incidents that require more than one dose of a prescription medicine.			
** Lost workday case - Any injury or illness that results in the employee being unable to work the next scheduled shift, or any injury or illness where the employee, following medical treatment is:			
-- assigned to a temporary job;			
-- working at a permanent job less than full time; or			
-- working at a permanently assigned job but unable to perform all the duties normally required.			
*** Exposure hours - Number of actual hours worked by employees during the calendar year.			
**** Lost workdays - Number of days injured or ill employees were scheduled to work but could not.			

CONTRACTOR ENVIRONMENTAL SAFETY AND HEALTH SCREENING QUESTIONNAIRE #HSC 002

ARE INJURY AND ILLNESS REPORTS OR REPORT SUMMARIES SENT TO THE FOLLOWING:		CHECK ONE YES NO		HOW OFTEN?	
Field Superintendent					
Vice President of Construction					
President of Firm					
Safety Officer/Dept. in Company (If yes, list name, title, and telephone number)					
Name: Title: # ()					
Project Environmental Safety, Health, and Housekeeping Management and Inspections					
(If yes, list name and title of persons who perform inspections)					
Names: Titles:					
List names and expected positions of key supervisory personnel planned for work at ASARCO LLC facility:					
NAME		POSITION			
Written safety program used? <input type="checkbox"/> Yes <input type="checkbox"/> No (Attach copies)		Site safety meetings held? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Written environmental health program used? <input type="checkbox"/> Yes <input type="checkbox"/> No (Attach copies)		How often?			
Environmental Safety and health training program used for new employees? <input type="checkbox"/> Yes (see below) <input type="checkbox"/> No		Disciplinary program available for environmental safety violations? <input type="checkbox"/> Yes <input type="checkbox"/> No			
IF PROGRAMS AND TRAINING AVAILABLE AND USED, DO THEY INCLUDE THE FOLLOWING:		MSHA 30 CFR Subpart	OSHA 29 CFR	Meets MSHA Requirements?	Meets OSHA Requirements?
		YES NO	YES NO	YES NO	YES NO
General Environmental Safety and Health Provisions and Rules					
Occupational Health and Environmental Controls and Rules					
Personal Protective and Life Saving Equipment and Rules					
Fall Protection, Prevention, Rules and Equipment					
Fire Protection, Prevention, Rules and Equipment					
Signs, Signals, and Barricades, Rules and Equipment					
Tools - Hand and Power, Rules, and Protective Equipment					
Welding and Cutting, Rules and Protective Equipment					
Electrical, Rules and Protective Equipment					
Ladders and Scaffolding, Rules and Protective Equipment					
Cranes, Derricks, Hoists, Elevators, Conveyors, Rules and Protective Equipment					
Motor Vehicles, Mechanized Equipment, Marine Operations					
Excavations, Trenching, and Shoring					
Concrete, Concrete Forms and Shoring					
Steel Erection					
Tunnels and Shafts, Compressed Air					
Demolition					
Blasting and Use of Explosives					
Power Transmission Distribution					
Asbestos Standard (OSHA)					
Arsenic Standard (OSHA)					
Lead Standard (OSHA)					
Cadmium Standard (OSHA)					
Hazard Communication Standard (OSHA)					
Lock out/Tagout (OSHA)					
Confined Space Standards (OSHA)					
Construction Lead Standards (OSHA)					
DO YOU CONDUCT?					
Pre-employment Physicals <input type="checkbox"/> Yes <input type="checkbox"/> No		Audiometric Baselines <input type="checkbox"/> Yes <input type="checkbox"/> No			
Pulmonary Function Tests <input type="checkbox"/> Yes <input type="checkbox"/> No		Blood Lead Baselines <input type="checkbox"/> Yes <input type="checkbox"/> No			
Respirator Use Medical Clearance <input type="checkbox"/> Yes <input type="checkbox"/> No		Cadmium Baselines <input type="checkbox"/> Yes <input type="checkbox"/> No			

CONTRACTOR ENVIRONMENTAL SAFETY AND HEALTH SCREENING QUESTIONNAIRE #HSC 003

TRAINING PROGRAM AVAILABLE FOR NEWLY HIRED OR PROMOTED SUPERVISORS		
YES (See below)	NO	
IF YES, DOES IT INCLUDE THE FOLLOWING		
	(Check One)	
	YES	NO
Safe work practices		
Inspection techniques		
Toolbox safety meetings		
Emergency procedures		
First-aid procedures		
Accident prevention		
Fire protection and prevention		
Pework orientation		
Post construction clean-up and orientation		
Hazard communication		
Environmental Health and Safety regulatory standards		
QUESTIONS		
	(Check One)	
	YES	NO
Have you ever been inspected by OSHA, MSHA, EPA or MDEQ?		
If yes, have citations been issued in the last three years? (Attach copies of citations)		
Do you conduct inspections and tests of construction equipment, for example, slings, cranes, hand and power tools, electrical supply, and ground fault circuit interrupters?		
Are records prepared and maintained as required by federal and state laws?		
If operators of equipment are certified, enter name of person/organization/consultant providing certification for:		
Cranes		
Mobile Equipment		
Fork Lift Trucks		
COMMENTS BY CONTRACTOR OFFICIAL REFLECTING COMPANY ENVIRONMENTAL SAFETY AND HEALTH POLICY		
QUESTIONNAIRE COMPLETED BY:		
NAME:	TITLE:	
COMPANY:		
ADDRESS:		
TELEPHONE:	DATE:	

END OF SECTION

SECTION V

SECTION V

AGREEMENT

SECTION V

AGREEMENT

CONSTRUCTION OR REPAIRS CONTRACT

CONTRACT FOR

2007 Cleaning & Demolition Project and the CAMU Construction Project

THIS AGREEMENT is made the _____ day _____ of 20____, by and between: _____ whose address is: _____ (hereinafter called the "Contractor") and ASARCO LLC, whose address is: 1150 N. 7th Avenue, Tucson, Arizona 85705 (hereinafter called the "Owner").

Whenever used in this Agreement, the terms "Owner" and "Contractor" shall include their respective directors, officers, employees, servants, affiliates, subsidiaries, agents, successors and assigns. The term "Contractor" shall also include any and all subcontractors and their officers, employees, servants, affiliates, subsidiaries and/or agents, suppliers and any other parties in privity with the Contractor or under the Contractor's direction or control in connection with the Work.

WITNESSETH:

The Contractor and the Owner, for the consideration of the mutual covenants set forth herein, agree as follows:

Article 1. Scope of the Work

The Contractor shall furnish all such plans, labor, materials, transportation, tools, equipment and other facilities in strict accordance with the requirements and provisions set forth herein and in strict accordance with the specifications, and those drawings specifications which may be supplied by the Owner. This Agreement, the Appendices hereto and all documents listed below are incorporated herein by reference and made a part hereof and are hereinafter referred to collectively as the "Contract" or the "Contract Documents." All work required to be performed under the Contract and the Contract Documents shall be referenced herein as the "Work" or the "Project." A summary of work items are provided in the following:

- Section VI – General Provisions – Scope of Work for 2007 Cleaning & Demolition
- Section VI – General Provisions – Scope of Work for CAMU (RCRA Landfill) Phase 2 Cell Construction Project

Article 2. Time of Completion

The 2007 work to be performed under this Contract shall be completed no later than December 1, 2007. In addition, earlier deadlines exist for key project elements. Stage 1

cleaning and demolition shall be completed no later than July 15, 2007, and the Stage 2 cleaning and demolition and the CAMU Phase 2 Cell construction shall be completed no later than October 15, 2007.

Article 3. The Contract Price

The Owner shall pay the Contractor for the performance of this Contract, subject to any additions and deductions herein provided, the amount specified in the Cost Schedule Summary and any amendments thereto, in lawful currency of the United States of America under the conditions hereinafter provided. Contractor bid should include deductions for recoverable value from salvage of recyclable equipment or material, which shall become the property of the Contractor.

Article 4. Schedule of Values and Progress Payments

The 2007 Cleaning & Demolition Project and the CAMU Phase 2 Cell Project shall be invoiced separately. As soon as practicable after the first day of each calendar month, the Contractor shall present to the Owner two invoices equal to the percentage of the total amount of the Contract which has been completed from the start of each Project up through the end of the preceding month, plus the cost of materials purchased during the preceding month for each Project, together with such supporting evidence as may be required by the Owner. This invoice shall be based upon the schedule submitted by the Contractor. The amount due from the Owner to the Contractor shall be one hundred percent (100%) of the total amount due under the Contract for the Work completed, less the total of previous payments, but will not exceed 90% of the total contract price until project completion.. Upon the Owner's final acceptance of all Work required under the Contract, in accordance with Article 6 below, the Owner shall pay the Contractor a sum sufficient to increase the total payments to one hundred percent (100%) of the Contract price.

Article 5. Substantial Completion

"Substantial Completion" is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with all Contract Documents so the Owner can occupy or utilize the Work for its intended use. When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Owner a comprehensive list of items which remain to be completed or corrected relating to that portion of the completed Work. This list shall be identified by the Contractor as the "Contractor's Draft Punch List." Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract. Upon receipt of the Contractor's Draft Punch List, the Owner will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Owner's inspection discloses any item, whether or not included on the Contractor's Draft Punch List, which in the Owner's opinion prevents the Work from being substantially complete, the Contractor shall complete or correct such item upon receipt of notification by the Owner. The Contractor shall then submit a written request for another inspection from the Owner to determine Substantial Completion. When the Owner determines that the Work or designated portion thereof is substantially complete, the Owner will prepare and provide to the Contractor a Certificate of Substantial Completion which shall establish the date of Substantial Completion, and shall fix the time (if a change is required in the date originally

established for final completion) within which the Contractor shall finish any remaining items of Work itemized by the Owner. This listing of remaining items of Work shall be identified as the "Owner's Final Punch List" and shall be provided to the Contractor along with the Certificate of Substantial Completion.

Article 6. Acceptance and Final Payment

- A. Upon receipt of written notice from the Contractor that the Owner's Final Punch List is complete and the Work is ready for final inspection and acceptance, the Owner shall promptly make such inspection. If and when the Owner finds the Work fully performed and acceptable under the Contract, the Owner shall promptly issue a Certificate of Final Completion. After all appropriate adjustments have been made to the Contract price, the entire remaining balance shall be paid to the Contractor by the Owner within thirty (30) days after the date of issuance of said Certificate of Final Completion.
- B. Before issuance of the Certificate of Final Completion, the Contractor shall submit evidence satisfactory to the Owner that all payrolls, material bills, and other indebtedness connected with the Work have been paid, and that the Work is free of all liens and encumbrances. The Contractor shall provide the Owner with releases of claims and liens for all of its subcontractors. In the case of disputed indebtedness or liens, the Contractor must submit a surety bond satisfactory to the Owner guaranteeing payment of all such disputed amounts when adjudicated.

Article 7. Liquidated Damages

The Owner and the Contractor recognize that time is of the essence for this Contract and that the Owner will suffer financial loss if the Project is not completed within the times originally specified, plus any time extensions permitted under the terms of this Contract. The Owner and the Contractor also recognize the delays, expense and difficulties involved in proving the actual loss suffered by the Owner if the Project is not completed on time. Accordingly, instead of requiring any such proof, the Owner and the Contractor agree that as liquidated damages for delay (but not as a penalty) beyond the date of completion specified in Article 2 for key project elements, the Contractor shall pay the Owner a rate of \$1,000.00 per day for each key project element.

Article 8. Insurance Certificate

The Contractor shall deliver to the Owner, along with the signed Contract and prior to any equipment or personnel being brought onto the Owner's premises a Certificate of Insurance evidencing the insurance coverages described in Article 32 of this Contract.

Article 9. Compliance with Laws and Ordinances

This Contract shall be performed and all equipment, goods, services or work furnished hereunder shall be produced, sold or delivered in strict compliance with all federal, state and local laws, rules, regulations, standards and other governmental requirements in effect as of the date hereof including, but not limited to, the Occupational Safety and Health Act of 1970, 29 U.S.C. §§ 651 et seq. (the "Occupational Safety and Health Act"), the Mine Safety and Health

Act of 1977, 30 U.S.C. §§ 801 *et seq.* (the "Mine Safety and Health Act"), the statutes enforced by the United States Environmental Protection Agency ("U.S. EPA") and all applicable regulations and standards. The Contractor will furnish to the Owner certificates of such compliance in a form acceptable to the Owner. If the Contractor performs any Work or delivers any services or goods contrary to any laws, ordinances, rules or regulations, the Contractor shall bear all costs and expenses of any kind arising there from. The inclusion in this Contract of any specific requirements or agreements to comply with specific laws, regulations or ordinances does not and is not intended to relieve the Contractor of its obligation to comply with all laws, rules, statutes, regulations and ordinances.

Article 10. Employment and Related Laws

To the extent the goods and services to be provided hereunder are being utilized by the Owner to fulfill obligations pursuant to a contract with the federal government or any agency thereof or to the extent otherwise applicable as a matter of law to the contracting and/or subcontracting of services or Work hereunder, the following provisions are incorporated by reference and the Contractor represents that it will comply with them: The Equal Employment Opportunity Act, E.O. 11246 and 41 CFR §§ 60-1.4 and 60-1.7; the Employment of Veterans Act, 41 CFR § 60-250; and the Employment Handicapped Act, 41 CFR § 741-4, Drug Free Workplace Act of 1988 (Pub. L. 100-690); Walsh-Healey Public Contracts Act, 41 U.S.C. § 35-45; Service Contract Act of 1965, as amended, 41 U.S.C. 351, *et seq.*; Americans with Disabilities Act of 1990, 42 U.S.C. § 12101, *et seq.*; such other laws or regulations as the federal government may require the Owner to flow down to its contractors; and all rules and regulations issued pursuant to the foregoing.

Article 11. Intent of Contract Documents

The intention of this Contract is to include all labor and materials, equipment, supplies, services and transportation necessary for the proper execution and completion of the Work. All services, materials, equipment, activities or Work that are not specifically identified in Article 1, shown on the drawings, stated in the specifications or other Contract Documents, or listed herein, but that are reasonably necessary for the proper completion of all Work on the Project in accordance with the highest industry standards, shall be provided by the Contractor the same as if specifically identified in Article 1, shown on the drawings, stated in the specifications or other Contract Documents, or listed herein. Contract terms which have a well-known technical or trade meaning shall be interpreted accordingly. In the event of any inconsistency, conflict or ambiguity between or among the Contract Documents, such conflict shall be resolved by referring to the Contract Documents in the following order of precedence: (1st) the most recent change orders and written amendments to this Contract signed by the Owner and Contractor; (2nd) the terms and conditions of this Contract.

Article 12. Drawings and Specifications

The Owner agrees to furnish, without charge to the Contractor, one (1) set of reproducible specifications and prints of all drawings listed in the specifications. Where revised or additional drawings and specifications are prepared as hereinafter provided, the Owner will furnish one (1) set of such revised or additional drawings and specifications to the Contractor.

The Owner agrees to furnish supplemental drawings as may be required to clarify the Contract drawings. Supplemental drawings shall neither enlarge nor decrease the scope of the Work. Where alterations in the Contract drawings and specifications affect the extent of the Work, the changes shall be governed as provided in Article 26 of this Agreement.

Article 13. Order of Completion and Schedules

The Contractor shall complete any portion or portions of the Work determined by the schedules issued by the Contractor to the Owner and mutually agreed upon by the Owner and the Contractor.

Article 14. Contractor's Understanding

To the extent reasonably practicable or consistent with trade or industry practice, the Contractor shall satisfy itself as to the nature, physical condition and location of the Work, including but not limited to all subsurface conditions, the character of equipment and facilities needed prior to and during the execution or performance of the Work, the general and local conditions, and all other matters which can in any way affect the Work under this contract. The Owner's subsurface investigations (if provided) are made for design purposes only. Owner does not warrant that the conditions indicated by these investigations are representative of those throughout the Work area, or in any part of it. Information supplied by the Owner regarding subsurface conditions is provided to supplement the Contractor's own subsurface investigation, and such information is not to be relied upon by the Contractor. The Contractor's right to recovery or relief for any reasonably unanticipated or latent condition, shall be governed by Article 37 of this Contract.

Article 15. Utilities and Temporary Facilities

The Owner will supply electricity where available on site (for equipment plug-ins) and water from the truck fill station (for dust control) required for demolition of the plant and construction of the CAMU. Pursuant to Section VI - General Provisions, the Owner shall provide adequate shower and lunchroom facilities at the Project site. However, the Contractor is responsible for janitorial service and maintenance of these facilities.

Article 16. Status and Responsibility of the Contractor and its Personnel

It is understood and agreed that the status of the Contractor and its subcontractors hereunder is that of an independent contractor, that their personnel performing services or Work hereunder shall under no circumstances be deemed to be employees of the Owner, and that any Worker's Compensation Insurance coverage and Occupational Safety and Health Administration ("OSHA") or Mine Safety and Health Administration ("MSHA") training required for such personnel will be the sole responsibility of the Contractor. Notwithstanding the aforesaid understanding, the general instructions of the Owner in connection with accomplishing the Work to be done hereunder shall be followed by the personnel of the Contractor.

The Contractor shall at all times enforce good order among its employees, and shall seek to avoid employing on the Work any unfit person or anyone not skilled in the Work assigned to him.

If for any reason the Contractor's employees or any of its subcontractor's employees or agents acquire a status imposing liability on the Owner for employees' contributions or taxes under the Federal Insurance Contribution Act, the Federal Unemployment Tax Act, any State Unemployment Tax or Wage Protection Act, any savings, profit sharing, pension, equity participation, or other benefit plans or for the violation of any federal, state or local act, statute or regulation, then the Contractor shall be solely and exclusively liable for, and shall indemnify, defend and hold harmless the Owner against the same so as to relieve the Owner from any and all liability, loss or damage therefore and from the responsibility for making reports or keeping records with respect thereto.

Article 17. Environmental Safety And Health Policy & Training

By accepting their Contract and beginning performance hereunder, the Contractor acknowledges that providing a safe and healthy workplace and protecting the environment is the Owner's first priority. The Contractor further agrees that any of its officers, agents, employees or subcontractors that enter the Owner's premises will be trained by the Contractor, in the following areas: a) applicable environmental safety and health protection procedures, laws and regulations of federal, state and local governmental agencies including but not limited to OSHA and MSHA and/or their state or local equivalents; b) applicable environmental protection laws, procedures and regulations enforced by federal, state and local governmental agencies including, but not limited to, the U.S. EPA and/or their state or local equivalents; and c) the Owner's site policies, rules and procedures. Owner agrees to furnish to Contractor, prior to the commencement of work, copies of such site policies, rules and procedures. HAZWOPER training is required for all workers on the plant site.

Article 18. General Environmental Safety and Health Provisions

- A. Contractor agrees to fully comply with all Owner control procedures relating to facility access, including but not limited to, employee identification and information requirements, sign in/out and work initiation/termination notification procedures. Contractor agrees to comply with all Owner requirements applicable to Contractor employee presence on site, including but not limited to, the use of respirators and personal protection equipment (e.g. hard hats, seat belts, gloves, safety glasses and coveralls) and the general environmental safety and health provisions set forth below. The Contractor and its subcontractors and employees will complete and provide to the Owner the forms contained within Owner's Contractor Policy, and any other requested forms relating to environmental safety, health and environmental protection.
- B. Contractor shall designate a job site representative to be its safety supervisor and that person shall be responsible for promoting environmental safety, health, and accident prevention, interest in compliance with applicable laws, rules and regulations among its employees, and coordinating such activities with Owner and any subcontractors and suppliers of Contractor.
- C. Contractor shall convey in writing and orally to its employees that they must notify Contractor and Owner immediately of any environmental safety or health concerns, newly discovered hazards or problems they may have had at the project, regardless of whether such concerns or problems relate to any job site policy, law, rule, regulation or any physical condition or process involving the project premises or any circumstances, or any actions or

inactions of Owner or Contractor. Upon receipt of such notice from an employee, or as follow-up to any oral or written notice issued by Owner to Contractor's site personnel, Contractor must notify Owner in writing within twenty-four (24) hours, of the stated concern, hazard or problem and what corrective and/or protective action has been taken and/or remains to be taken to evaluate the problem, mitigate the problem, prevent its recurrence, and effectively communicate with affected employees.

- D. The Owner understands that in furtherance of this Article 18, it shall provide Contractor with its Contractor Policy, environmental safety and health rules and training materials, and agree to do so prior to the execution of this Agreement. The Contractor agrees that once it has been provided with and had the opportunity to review said materials, it will institute and follow such rules and apply them to the work performed under this Contract.
- E. Owner and Contractor shall take all reasonable precautions to ensure the environmental safety and health of all persons working at the project and all persons who may in any way be affected by the contract Work, including but not limited to:
1. Contractor agrees to limit its travel on the Owner's premises and facilities solely to that necessary for performing the contracted work or services, and to be accompanied by Owner's personnel, unless authorized in writing to be unaccompanied following initial work site arrival.
 2. Contractor agrees to comply with the Owner's substance abuse policies.
 3. Contractor, with Owner's assistance, agrees to become familiar with the physical characteristics of the worksite, including, but not limited to, any hazards, restricted areas, protective measures and applicable emergency and evacuation procedures, and shall educate its employees as to those issues accordingly.
 4. The Contractor and Owner shall provide safe, functional equipment and materials and any training, testing or certifications that are necessary, appropriate or required to utilize such materials and equipment, -- including all equipment and tools needed to perform the job. The Contractor shall provide its employee's protective equipment and clothing (including coveralls) and respirators appropriate for the type of work and work location. The Contractor shall also bear the entire expense of all required/necessary medical testing (including blood work) on Contractor's employees as it relates to this project. Contractor also agrees to maintain such equipment, materials and tools in good working condition.
 5. Contractor agrees to be subject, at any time, to Owner's contract compliance monitoring, including inspections, testing, and Owner's acceptance or rejection of Contractor-provided equipment, materials and tools employed or used to complete contract Work.
 6. Contractor agrees to obtain Owner's written approval of its subcontractors and their employees before utilization on Owner's premises. Contractor must ensure that Subcontractors meet the same environmental safety and health requirements and provide the same information to the Contractor as Owner requires of Contractor. The Contractor in turn must provide copies of all such information to Owner.

- F. Contractor shall take all reasonable precautions to assure that it discovers, is made aware of and corrects any unsafe or unhealthy conditions, circumstances, actions or inactions that arise at the project and that directly or indirectly affect any of Contractor's personnel or the personnel of any other contractor or the Owner at the site.
- G. Contractor shall promptly advise Owner of any investigation or inspection of the project site of Contractor's workplace by any federal, state or local governmental agency and shall permit Owner to participate fully in such inspections, and shall provide copies of inspection reports and notices of violations, and advise the Owner in writing of the progress and outcome of any such inspection or investigation related to litigation.
- H. Contractor shall immediately notify Owner (and if requested provide a detailed written report) of every accident involving injury to personnel or occupational illnesses or damages to Owner's property occurring in connection with the Work or on the Owner's facility, and agrees to assist Owner with any accident investigation in which Contractor has any involvement by providing access to and preserving the work area and by producing any and all related documents and records and any employees who have knowledge of, were involved in or may have witnessed the accident for interviews. Contractor also agrees to record and report all required information to all appropriate federal, state and local regulatory agencies and to provide copies of such reports and information to Owner. Contractor shall also report to Owner employee days and hours worked while on company premises.
- I. Contractor acknowledges and agrees that any environmental safety or health advice or training, inspections, environmental safety or health equipment, health or biological monitoring or other environmental safety or health services that may be provided or performed by Owner for itself or the Contractor, its subcontractors or their employees is strictly voluntary and is provided solely to enhance environmental safety and health in the workplace. Any such actions by the Owner shall not be alleged to, nor constitute a change or diminish or relieve the Contractor or its subcontractors of contractual, legal or governmental responsibilities in these areas and shall not constitute, nor be alleged in any inspection, investigation or legal proceeding to constitute control, supervision or direction by the Owner of Contractor's or its subcontractor's employees.
- J. Contractor agrees to provide Owner with its written safety program and certify that all required training has been completed in a timely manner pursuant to the applicable federal and state laws and regulations, and provide such completed forms as requested by the Owner to demonstrate compliance with this provision.
- K. Contractor agrees to use and employ a environmental safety and health program at least as comprehensive as that included in Owner's Contractor Policy (which Owner agrees to provide the Contractor prior to the execution of this Agreement) and to conform to all requirements and information requests set forth in said policy. If additional precautionary requirements are agreed to, they are set forth in Section VI – Special Provisions and Section IX hereto and Contractor agrees to comply with them.

Article 19. General Environmental Provisions

- A. Pursuant to Section VI – General Provisions of this agreement, Contractor will properly remove all asbestos for disposal in accordance with the applicable laws and regulations, and in accordance with the asbestos design plan of the Contractor's subcontractor. The Contractor shall dispose of said asbestos materials in accordance with all applicable laws and regulations. The management, storage, removal and disposal of all other supplies and materials utilized in the work and waste materials generated in the course of performance shall be governed in accordance with Section VI – General Provisions of the Agreement. If Contractor utilizes any materials designated by federal, state or local law as hazardous substance or hazardous waste, such materials must be stored in appropriate containers and spill control equipment must be available in the storage areas.
- B. In the event of a fire or a spill or release of hazardous materials or wastes on Owner's property, Contractor will take actions necessary to prevent harm to the environment and human health, and immediately notify the Owner in accordance with the notice provision contained in Article 42, as well as the appropriate governmental authorities.
- C. Contractor may not bring any materials on to Owner's property nor utilize any products that contain the following substances: asbestos, chlorofluorocarbons (CFCs), chlorinated solvents, polychlorinated biphenyls (PCBs).
- D. Pursuant to Section VI – General Provisions of this Agreement, steel that cannot be properly cleaned shall be disposed of in the CAMU Phase 2 Cell.

Article 20. Assessment For Contractor Violations And Audit Of Contractor Compliance

The Contractor recognizes and acknowledges that violations by the Contractor of health, safety, environmental and other statutory and regulatory authority may result in civil and/or criminal fines and penalties or in other damages and losses to both the Owner and the Contractor. The Contractor agrees that the Owner may assess or back charge the Contractor in an amount equal to that which OSHA, MSHA or U.S. EPA assesses Owner for environmental health and safety or environmental violations to the extent that the Contractor, its agents, subcontractors or employees have committed such a violation. Notwithstanding, this language is not applicable to stipulated damages which EPA may apply to Owner. The Owner also shall have the right to inspect or audit the Contractor's records, conduct or actions during the performance of this Contract for the purpose of monitoring the Contractor's compliance with and enforcement of the terms of Articles 20 through 23. The Owner's remedies against the Contractor for violation of the terms of this Article shall not be limited to those set forth herein.

Article 21. Surveys, Permits and Regulations

If involved in the subject matter of this Contract, the base lines and mean datum will be established by the Owner; the control lines and levels and all general layout work will be the responsibility of the Contractor. All controls established by the Contractor shall be preserved and maintained throughout the life of the Contract.

The Contractor shall provide all notices required by law which bear on the conduct of the Work as drawn and specified. If the Contractor observes that drawings and specifications are at variance therewith, the Contractor shall promptly notify the Owner in writing. If the Contractor performs any Work knowing it to be contrary to any such law, rule or regulation, and without such notice to the Owner, the Contractor shall bear all costs rising therefrom.

Article 22. Protection of the Public, the Work and Property

The Contractor shall take all necessary precautions for the protection and safety of employees on the Project, of all other persons and of adjacent private and public property. The Contractor at all times shall maintain adequate protection of the Work from loss and damage and shall protect the Owner's property and all persons thereon from injury, damage or loss by reason of any act or omission of the Contractor or any subcontractor.

In an emergency affecting safety, life or the Work or of adjoining property, the Contractor is, without special instructions or authorization from the Owner, hereby authorized to act at the Contractor's discretion to prevent such threatened loss or injury. The Contractor shall also so act if instructed by the Owner, and compensation therefore, to be on a time and materials basis.

Any compensation claimed by the Contractor on account of an emergency of this nature shall be determined by mutual agreement and failing which, shall be resolved pursuant to Article 38.

Article 23. Inspection of Work

The Owner and its representatives shall at all times have access to the Work, and the Contractor shall provide safe and proper facilities for such access and for inspection. However, the mere fact that the Contractor's facilities or Work have been inspected is not to be interpreted as a determination by the Owner that the Contractor's Work is acceptable or that Contract requirements have been waived.

If the specifications, the Owner's instructions, laws, ordinances or any public authority require any item of material, equipment or Work to be specially tested or approved, the Contractor shall give the Owner timely notice in writing of its readiness for inspection. If the inspection is by an authority other than the Owner, the Contractor shall give the Owner notice of the date fixed for such inspection. The Owner shall conduct all inspections promptly. Where practicable, such inspections shall occur at the source of supply.

If any Work should be covered up by the Contractor before examination by the Owner without approval or consent of the owner, it must, if required by the Owner, be uncovered for examination and properly covered again at the Contractor's expense. Even though the Owner has examined a particular item of Work, the Owner may order re-examination of such Work, and if so ordered, the Work must be uncovered by the Contractor. If such Work is found to be in accordance with the Contract, the Owner shall pay the cost of re-examination and replacement. If such Work is not in accordance with the Contract, the Contractor shall pay such cost.

Article 24. Contractor's Covenants/Supervision and Superintendence

The Contractor recognizes the relationship of confidence established between the Contractor and the Owner by this Contract which is based on a time and materials arrangement. The Contractor covenants to use its best skill and judgment in performing the Work in a workmanlike manner with efficiency and diligence.

The Contractor shall maintain a competent staff at all times to supervise and perform the Work. The Contractor shall maintain on the Project during its progress, a competent superintendent and any necessary assistants, all satisfactory to the Owner. Directions for contract compliance by the Owner may be given to the superintendent and shall be binding on the Contractor. Directions for contract compliance shall be confirmed in writing upon the written request of the Contractor. The Owner maintains the right to direct the Contractor to increase or modify the method or manner of supervision or superintendence on the Project if it deems necessary for contract compliance.

The Contractor shall use its best judgment and skill in dealing with labor matters, and take all reasonable steps to avoid labor disputes. In the event of any strike or threat of strike, slowdown, featherbedding or other like practices, the Contractor shall apprise the Owner of all relevant facts and implications of the particular labor problem involved, and shall consult in good faith with the Owner in an effort to reach a mutually satisfactory solution to such labor problem and, so far as reasonably possible, to protect the Owner against delays affecting the Work or damage or losses to its other operators.

Article 25. Qualification and Performance of the Contractor's Employees

The Contractor shall at all times supply a sufficient number of skilled workmen to diligently pursue the Work. Where required by applicable statutes, codes, rules, regulations and ordinances, all workmen engaged in such Work shall present evidence by certificate or otherwise that they are qualified to do the Work in conformity with such statutes, codes, rules, regulations and ordinances.

Article 26. Changes in the Work

The Owner, without invalidating this Contract, may at any time order extra Work or initiate changes in the Work by altering, adding to or deducting from the Work. If such extra Work or change involves a change in cost or in the time required for completion, the Contract price and Contract performance period shall be increased or decreased in accordance with the terms hereof. Either party may initiate the change process. The changes to be made will be described and/or itemized in the form included in Section VI. Upon receipt of a change order request from the Owner, the Contractor shall complete and submit promptly to the Owner, a change order proposal and include therein an itemized statement of the extension or reduction in the time for completion of this Contract which the Contractor deems reasonable, and the Contractor's calculation of the adjustment in the Contract price resulting from the changes or extra Work. Any resultant change order must be executed by both parties before Work on the changes is begun, unless the Owner issues a written order to the Contractor to proceed immediately with the Work identified.

No extra Work shall be performed or change shall be made except by written order of the Owner, and no claim for an increase in the Contract price or an increase in the time for completion shall be valid unless the extra Work or change was ordered in writing.

Article 27. Correction of Work Before Final Payment

The Contractor shall within ten (10) days of receipt of written notice remove from the premises all materials whether incorporated in the Work or not, and take down all portions of the Work, where the Owner has advised the Contractor that such materials or Work fail to meet Contract requirements. The Contractor shall within then (10) days replace and re-execute the Contractor's own Work in accordance with this Contract and without expense to the Owner and shall bear the expense of making good all Work of other contractors destroyed or damaged by such removal or replacement.

If the Contractor does not remove such Work and materials within ten (10) days after service of written notice, the Owner may remove them and may store the materials at the expense of the Contractor. If the Contractor does not pay the expense of such removal and storage within ten (10) days thereafter, the Owner may, upon ten (10) days written notice, sell such materials at auction or at private sale and shall pay to the Contractor the net proceeds thereof, after deducting all the cost and expense that should have been borne by the Contractor. Should such cost and expense exceed the auction or sale price, the Contractor shall pay such difference promptly to the Owner upon the presentation of a substantiating invoice by the Owner. The Contractor waives all rights to claim damages or any other remuneration, except as required by law, for sale of materials at auction or private sale. Any dispute under this Article shall be determined in accordance with Article 38 hereof.

Article 28. Owner's Right to Terminate Contract for Cause

Any of the following reasons shall provide the Owner with a basis for terminating the Contract for cause: a) any proceeding is instituted by or against the Contractor seeking to adjudicate it as bankrupt or insolvent, or seeking liquidation, winding up, reorganization, arrangement, adjustment, protection, relief or composition of its debts under any law relating to bankruptcy, insolvency or reorganization or relief of debtors or seeking the entry of an order of relief or the appointment of a receiver, trustee or other similar official for it or any substantial part of its property; or b) the Contractor admits its inability or fails to pay its debts generally, or shall make a general assignment for the benefit of its creditors; or c) the Contractor at any time fails, refuses or neglects to supply enough properly skilled workmen or proper materials; or d) the Contractor fails to make prompt payments to subcontractors or for material or labor; or e) the Contractor disregards laws, ordinances or the instructions of the Owner; or f) the Contractor violates any provision of this Contract; or g) the Owner reasonably determines that the Contractor has not timely or satisfactorily performed its Contract Work. If the Contractor shall fail to remedy any such default or deficiency to the satisfaction of the Owner within ten (10) day after the Owner's issuance of written notice to the Contractor, then the Owner may, without prejudice to any other right or remedy it may have under this Contract or as a matter of law, terminate the employment of the Contractor for the Contractor's default and take possession of the premises and of all material, tools and appliances thereon and finish the Work by whatever method the Owner deems appropriate and expedient.

If the unpaid balance due on the Contract for Work performed to the date of termination of the Contractor exceeds all loss or damages of the Owner caused in whole or in part by the Contractor's default, including but not limited to, and financial losses or expenses incurred or suffered by the Owner as a result of a delay in completion of the Work and the expense of finishing the Work then such excess shall be paid to the Contractor within a reasonable time after final completion of the Project. If such loss or damages to the Owner shall exceed such unpaid balance, to the Contractor shall be liable to the Owner for all damages incurred by the Owner which were caused in whole by the Contractor. Following termination, the Owner may complete the Contract Work and re-procure the necessary services for completing the Work, and the Contractor shall be liable for any additional damages or costs incurred by the Owner up to the Contract Value.

Article 29. Owner's Right to Terminate Contract for Convenience (Without Cause)

The Owner may, at any time, terminate the Contractor's services under the Contract for any reason whatsoever or for its convenience by giving the Contractor not less than thirty (30) days' written notice of termination setting forth the effective date of termination. In the event of such termination, the Owner shall pay to the Contractor for all the Work actually performed, accepted and approved by the Owner up to the effective date of such termination, plus reasonable costs associated with cessation of the Work. The Parties agree to use their best efforts in mutually agreeing upon said termination costs. Owner shall have the right to audit and review all amounts claimed by the Contractor pursuant to this Article. The Contractor shall not be entitled to demand any damages, as a consequence of such termination.

Article 30. Removal of Equipment

In the case of termination of this Contract before completion for any cause whatsoever, the Contractor shall promptly remove any part or all of the Contractor's equipment and supplies from the property of the Owner, failing which the Owner shall have the right to remove such equipment and supplies at the expense and at the risk of the Contractor, without liability of the Owner for any damage to, or loss of the same.

Article 31. Payments Withheld

The Owner may withhold all or part of any progress of final payment to the extent necessary to protect the Owner from loss or damage on account of: a) Damaged or defective Work not remedied; b) Claims filed or reasonable evidence indicating probable filing of claims by other parties against the Contractor or the Owner; c) Failure of the Contractor to make payments properly to subcontractors or for material or labor; d) Damage to the Owner's property of the work of another contractor; and, e) The Contractor's violation of any applicable laws, ordinances, rules, regulations, instructions and/or other general regiments.

Article 32. Contractor's Insurance

A. Minimum Scope and Limits of Insurance:

The SUPPLIER/CONTRACTOR shall procure, pay for and maintain in full force and effect at all times during the performance of the Services and until final acceptance of the Services,

policies of insurance issued and financially responsible carriers with Best's ratings of not less than A:VII, that afford the following coverages:

- | | |
|---|--|
| 1. Workers' Compensation | Statutory |
| 2. Employer's Liability Insurance | Not less than \$1 million each accident |
| 3. Business Automobile Liability coverage including owned, non-owned and hired car coverages. | Not less than \$1 million each accident |
| 4. Commercial General Liability Policy (ISO occurrence or claims-made form) including bodily injury, property damage, completed operations and products coverages. (Completed operations shall be provided for a period of two (2) years from final acceptance of the Work by OWNER. If a general liability policy is written on a claims-made basis, the Owner's interest must continue to be covered for an additional two (2) year period after policy expiration. | Not less than \$1 million per occurrence, and \$2 million in the aggregate, combined single limit for both bodily injury and property damage

In addition, not less than \$5 million for property damage associated with stack demolition. |
| 5. Environmental Impairment Liability Policy | Not less than \$2 million each accident |

B. Other Insurance Provisions

The policies are to contain, or be endorsed to contain, the following provisions:

1. With respect to Commercial General Liability, Automobile Liability and Environmental Liability Coverages, these policies shall:
 - a. Name the OWNER, its parents, subsidiaries, agents and affiliated companies, and its directors, officers, agents and employees as *Additional insureds*;
 - b. Expressly include a *severability of interest clause*; and
 - c. Be *primary insurance* as respects the OWNER, its parents, subsidiaries, agents and affiliated companies, and their directors, officers, agents and employees.
 - d. Any *failure to comply* with reporting provisions of these policies shall not affect coverage provided to the OWNER.

2. With respect to all coverages, every policy (except environmental impairment liability) shall contain a *Waiver of Subrogation* endorsement in favor of the OWNER, its parents, subsidiaries, agents and affiliated companies, and their directors, officers, agents and employees.

C. Verification of Coverage

Before any equipment or personnel is brought to the Owner's premises, Contractor agrees to deliver to Owner an original *Certificate of Insurance* evidencing the above coverages. All policy deductibles and/or self-insured retentions must be shown on the Certificate(s) and are subject to approval by the Owner. Certificates shall expressly provide that no less than thirty (30) days prior written notice shall be given Owner in the event of material alteration to or cancellation of the coverage evidenced by such policies. Upon renewal of each policy, Contractor shall provide to Owner a *Certificate of Insurance* evidencing all of the provisions specified in this Article.

Contractor will maintain the original of all policies and endorsements, and provide Owner with copies of the same upon request of Owner.

D. Subcontractors

Coverages for subcontractors shall be subject to those requirements stated in the applicable subcontract.

Article 33. Indemnity by the Contractor

Contractor agrees to indemnify, defend and hold harmless Owner from and against all claims, suits or demands of any kind and description, and from and against all alleged or actual damages, loss, fines or penalties which Owner or Owner's property may sustain, incur, suffer or receive and which arise or allegedly arise in whole or in part from Contractor's willful misconduct or grossly negligent performance under this Agreement. Contractor's indemnity obligations include, but are not limited to, payment of all judgments, legal fees and expenses incurred by Owner. Owner's rights and Contractor's indemnity and defense obligations hereunder shall apply on a comparative basis of fault if Owner or any third party is or may be liable or responsible in part for the claim, suit, demand, damage, loss, fine or penalty sustained, incurred, suffered or received. Contractor's indemnity and defense obligations shall apply for the amount and to the extent that Contractor is at fault or the cause of such loss or damages. Owner's rights and Contractor's obligations hereunder shall survive the expiration or termination of this Agreement.

The Contractor's duty of indemnity shall apply with full force and effect even if the Owner provides the Contractor with environmental safety, health and training materials, goods or services or otherwise voluntarily assists the Contractor in protecting people and property and meeting its compliance obligations hereunder. The Contractor acknowledges that any such services provided by the Owner are provided voluntarily and solely for the purposes of assisting the Contractor in protecting the environment and people.

Article 34. Assignment

The Contractor shall not assign or sublet this Contract in whole or in part, nor shall the Contractor assign any monies due or to become due in hereunder, without the prior written consent of the Owner.

Article 35. Coordination of Work

The Contractor shall conduct and coordinate all Work on the Project so as to cause no interference when possible, or a minimum of interference when such interference is unavoidable, with the Owner's activities and operations. Where interference with the Owner's operations becomes absolutely necessary, permission shall be requested by the Contractor no less than seventy-two (72) hours in advance.

Article 36. Subcontractors and Suppliers

The Contractor will not employ any subcontractor without the prior written approval of the Owner. Contractor agrees to be responsible for any failure by the subcontractor to comply with the terms and conditions of this Contract which are in any way applicable to such subcontractor. Nothing herein shall be deemed to create a contractual relationship between any such subcontractor and the Owner or provide a basis for any claim by a subcontractor against the Owner.

All of the Contractor's subcontractors and suppliers shall be apprised of the terms and conditions of this Contract and shall be held liable, accountable for and subject to these terms and conditions in their own subcontract work and supply contracts to the same extent and degree that the Contractor is or would be liable, accountable for and subject to these terms and conditions in this Contract Work. It shall be the Contractor's duty to ensure that its subcontractors and suppliers accept and comply with the terms and conditions of this Contract and the Contractor shall supply to the Owner evidence of such compliance in a form acceptable to the Owner or provide a basis for any claim by a subcontractor against the Owner.

Article 37. Contractor Claims

If the Contractor is delayed, disrupted or interfered with or suffers damage or loss of any kind at any time in the progress of the Work by an act or neglect of the Owner, or a separate contractor employed by the Owner, or by changes or alleged changes ordered in the Work, or by an event giving rise to a claim of any nature or by a force majeure event (as defined in Article 41), then the Contractor's remedy against the Owner shall be the award, with the concurrence of the bankruptcy court, of a change providing an equitable adjustment of either time or cost or both. All claims for equitable adjustment of the Contract shall be made in writing to the Owner no more than twenty-one (21) days after the occurrence of the event giving rise to the claim. An equitable adjustment of the Contract, shall be the Contractor's remedy from and against the Owner for any and all damages losses, expenses or costs (consequential or otherwise) sustained by the Contractor in connection with or arising from changes or alleged changes, delays, suspension, acceleration, hindrance, obstruction, unanticipated or differing site conditions, costs, duration-related economic injury, loss of productivity, extended home office overhead or any damages or expenses of whatever type and amount to the Contractor.

Article 38. Disputes

Claims, disputes or other matters in question between the parties to this Contract shall first be subject to mutually agreeable alternative methods of dispute resolution (i.e., negotiation); followed by mediation and then arbitration, as necessary and/or applicable. A demand for mediation shall be made within thirty (30) days after one party has notified the other party in writing that a dispute or claim has arisen. After the expiration of the thirty (30) day period, the parties may nevertheless agree in writing to submit the claim or dispute to mediation. Any mediation shall be held in accordance with the Construction Industry Mediation Rules of the American Arbitration Association in effect when the dispute arises, unless the parties mutually agree otherwise. The mediation shall take place in East Helena, Montana. The resulting decision of the arbitrators shall be final and binding on the parties. Judgment upon any award rendered by the arbitrators may be entered in any court having jurisdiction thereof. In no event shall the demand for mediation or arbitration be made after the date when institution of legal or equitable proceedings based upon such claim, dispute or other matter in question would be barred by the applicable statute of limitations.

Article 39. Technical Information

The term "technical information" as used in this Contract includes, but is not limited to, technical data, reports, models, drawings, specifications, operating manuals, designs, computations, formulas, apparatus, processes, patentable or unpatentable inventions and other engineering data. The Contractor agrees to accept the Owner's decision as to whether any particular information is technical information which has been made or conceived under this Contract.

It is understood that in the course of the Contractor's performance hereunder, the Contractor may learn or have access to technical information of the Owner. Unless otherwise required by law, the Contractor agrees that it and its personnel will keep in confidence all such technical information of the Owner and will not use or disclose the same without the Owner's written consent, either during the term of this Contract or at any time thereafter.

Article 40. Force Majeure

"Force majeure" shall be any cause beyond the control of the parties hereto which they cannot reasonably have foreseen or guarded against. Force majeure includes but is not limited to, acts of God, labor disputes, financial crises, fires, riots, civil commotions or civil unrest, incendiarism, interference by civil or governmental authorities, and acts of war (declared or undeclared). Should any dispute arise between the Owner and the Contractor regarding a force majeure event, such dispute will be resolved pursuant to Article 38 of the Contract.

Article 41. Notice

Written notice shall be deemed to have been duly served if delivered by hand or sent by certified or registered mail, in each case to the address or addresses of each party set forth on the first page of this Contract and to the attention of the facility, plant, or contract manager as appropriate. Also, where written notice is required under the Contract from the Contractor to the Owner, the Contractor shall also send separate notices to the Owner's Plant Manager, Project

Manager and Environmental Manager at the plant address set forth on the first page of this Contract. Each party shall advise the other in writing of any applicable address change.

Article 42. Governing Law

This Contract including all Contract Documents as well as performance and all disputes hereunder shall be governed by and construed in accordance with the laws of the State of Montana.

Article 43. Entirety Clause/Waiver

The terms and conditions of this Contract constitute the sole, exclusive and entire agreement between the Owner and the Contractor. Any modifications must be set forth in writing and signed by the Owner's and the Contractor's duly authorized representatives. If any provision herein is held to be invalid by any competent court, the remaining provisions of this Contract shall survive and remain in full force and effect. Any waiver by the Owner of any term, right or obligation under this Contract shall not be construed as a waiver for all purposes or for all subsequent opportunities for performance under this Contract.

Article 44. Conflicts

In the event of a conflict between the provisions of this Agreement and any Attachment(s) or Exhibit(s) attached hereto, the provisions of this Agreement shall govern.

IN WITNESS WHEREOF, the parties by their duly authorized representatives have executed this Contract and entered into this Contract on the dates set forth below. The date provided below by the final signatory to this Contract shall be the effective date of this Contract.

Contractor: _____

Owner: _____

By: _____

By: _____

Print Name: _____

Print Name: _____

Title: _____

Title: _____

Address: _____

Address: _____

Date: _____

Date: _____

Owner: _____

By: _____

Print Name: _____

Title: _____

Address: _____

Date: _____

SECTION VI

SECTION VI

GENERAL PROVISIONS

SPECIFICATIONS

The Standard Specifications for Road and Bridge Construction, edition of 1995, prepared by the Montana Department of Transportation and Montana Transportation Commission, hereinafter referred to as the "Standard Specifications," shall be applied to Project work as specified below and shall govern this Project and form the basis of this Contract, except as modified in these Contract Documents. Contractor shall note the 1995 Standard Specifications shall be used as modified herein without subsequent amendments or newer publications made by the Montana Department of Transportation and Montana Transportation Commission. The Standard Specifications are modified herein as detailed in the following divisions. Division and subdivision numbers refer to corresponding numbers of the Standard Specifications. Additional division or sections numbers may be used to specify items of work not included in the Standard Specifications.

Copies of the 1995 Standard Specifications may be obtained from Montana Department of Transportation, Contract Plans Section, 2701 Prospect Avenue, P.O. Box 201001, Helena, Montana 59620-1001, Telephone (406) 444-6215.

DIVISION 100 - GENERAL PROVISIONS

DIVISION 100

GENERAL PROVISIONS

SECTION 104 - SCOPE OF WORK

SECTION 104.02.4 Change Orders

Add the following: The Owner may initiate a change to the Contract at the request of the Contractor or on its own initiative by issuing a Change Order Directive Form. In response to the Change Order Directive Form, the Contractor shall submit the attached Change Order Proposal Form completed consistent with the instructions set forth below. Unless otherwise directed by the Owner, the Contractor's Change order Proposal shall include or address pricing of the change as follows:

1. The Contractor's direct labor cost to perform the changed work. This amount shall be composed of the Contractor's payroll costs to perform the changed work including social security, unemployment and workmen's compensation insurance;
2. The Contractor's direct cost to purchase materials, supplies and equipment to perform the changed work provided such items are incorporated into the work or consumed in the process of performing the work; and
3. The Contractor's rental cost to operate the machinery or equipment actually used to perform the changed work. This rental cost shall be based upon the amount of time required to perform the change, including the time to transport said equipment. Contractor's rental costs shall be priced on the basis of actual rental costs unless such costs exceed the Associated General Contractor's ("AGC") published rates; in such case, AGC's rates shall apply.
4. Once the total labor, material and equipment costs is determined (the total for 1, 2, and 3 above), the Contractor is entitled to a markup of 5% for overhead and 5% for profit on those direct costs.
5. For each subcontractor or sub-subcontractor that performs changed work, the subcontractor or sub-subcontractor shall be required to price its changed work consistent with paragraphs 1, 2, 3, and 4 above and the contractor shall be entitled to a combined total markup for overhead and profit of 5% on the subcontractor's or the sub-subcontractor's work.
6. As part of the Change Order Proposal Form, the Contractor shall include, if appropriate, a request for an extension of the contract performance period.

CHANGE ORDER DIRECTIVE FORM (CODEF)

PROJECT:

TO CONTRACTOR:

DIRECTIVE NO. _____

DATE:

You are directed to make the following changes in this Contract:

Not valid until signed by the Owner.

Signature of the Contractor indicates agreement herewith, including any adjustment in the Contract Sum or the Contract Time.

The Contract Price was.....\$

Net change as a result of previously authorized Change Order.....\$

The Contract Price Prior to this Change Order was.....\$

The Contract Price will be (increased) (decreased) (unchanged) by this
Change Directive (Please itemize change order price consistent with
Attached instructions and attach Change Order Form and related
documentation).....\$

The new Contract Price including this Change Order
will be.....\$

The Contract Time will be (increased) (decreased) (unchanged) () Days

The Date of Substantial Completion as of this date of the Change Order therefore is: _____

Agreed To by:

Authorized by:

CONTRACTOR

OWNER

ADDRESS

ADDRESS

AUTHORIZED REPRESENTATIVE

AUTHORIZED REPRESENTATIVE

DATE

DATE

CONTRACTOR CHANGE ORDER PROPOSAL FORM

PROJECT:

FROM CONTRACTOR:

CHANGE PROPOSAL NO.:

DATE:

IN RESPONSE TO DIRECTIVE NO. (IF APPLICABLE):

The Contractor proposes the following for costs to perform the above-referenced change:

1. Labor - Contractor will use the following workforce to perform the changed work (attached additional sheets if necessary)

<u>labor class</u>	<u>rate</u>	<u>hours</u>	<u>cost</u>
_____	_____	_____	_____ \$
_____	_____	_____	_____ \$
_____	_____	_____	_____ \$
_____	_____	_____	_____ \$
Subtotal			_____

2. Materials, supplies
and equipment -

Contractor will use the following materials, supplies
and equipment, which will be consumed in or
incorporated into changed work (attach additional
sheets if necessary)

<u>description of item</u>	<u>quantity</u>	<u>unit price</u>	<u>cost</u>
_____	_____	_____	_____ \$
_____	_____	_____	_____ \$
_____	_____	_____	_____ \$
_____	_____	_____	_____ \$
Subtotal			\$ _____

3. Equipment rentals - To perform the changed work, Contractor will use the following equipment (attach additional sheets if necessary) attached hereto:

<u>equipment item</u>	<u>rental rate</u>	<u>period</u> ¹	<u>cost</u>
_____	_____	_____	\$ _____
_____	_____	_____	\$ _____
_____	_____	_____	\$ _____
_____	_____	_____	\$ _____

Subtotal \$ _____

4. Total of Contractor's direct costs (Items 1, 2 and 3) _____
5. Overhead (5% of item 4) _____
6. Profit (5% of item 4) _____
7. Total cost to Contractor of changed work
(item 4 + 5 + 6) _____
8. Subcontractor or sub-subcontractor costs² _____
9. Profit and overhead on subcontractor or sub-
contractor costs plus markups (5% of item 8) _____
10. Total subcontractor or sub-subcontractor costs
Plus markups (item 8 + 9) _____
11. Total proposed cost (item 7 + 10) _____

I certify that this proposal is accurate and correct to the best of my knowledge and belief.

Authorized Representative of
Contractor

¹ Depending on the scope of the change, the period could be in hours, days, weeks or months.

² To be priced consistent with instructions.

104.10 SCOPE OF WORK FOR 2007 CLEANING & DEMOLITION PROJECT

(Add the following new subsection)

Project Specific Work

The 2007 Cleaning and Demolition project is first and foremost a materials removal project. Protection of human health and the environment is the prime objective. With this purpose in mind, the Contractor must implement techniques and material removal procedures to achieve the cleaning goal for this project before demolition takes place. The specific cleaning techniques selected by the contractor will be designed to minimize environmental and employee exposure while meeting the goals and objectives of the Consent Decree. The interior building cleaning will be accomplished primarily through the use of shovels, brooms, and industrial vacuums. Contractor crews may use man lifts and ladders to access high areas and must work in an efficient top down fashion to remove accumulated dust and debris. The work must proceed methodically from one end of each building interior to the other until the entire interior space has been cleaned. The intent of the cleaning is to remove the bulk of accumulated dust from within the buildings and reduce the potential for fugitive dust emissions during the demolition and dismantling phase. The remaining residues will be managed during the demolition using dust control measures and after demolition during cleanup.

Once clean, the 2007 Cleaning & Demolition of the Asarco East Helena Smelter facility will involve dismantling or demolishing plant buildings and associated structures, removing all debris and lead bearing material from the project site, recycling or properly disposing of all material (including but not limited to hazardous materials, liquid wastes, and solid wastes), backfilling areas with fumed slag to provide site drainage as shown in plans, and grading and capping the site. To complete this project the Contractor shall provide or perform the following Work (see Plan Sheets and Specifications for additional details):

1. Verify that all utilities have been de-energized to the equipment and buildings to be demolished. The Contractor must place a lock or tag on the energy source prior to the demolition period. Power to and lighting on the stacks must remain on until the stacks are taken down or FAA approval is obtained.
2. Remove catalyst contained in the Acid Plant Converter using a vacuum truck prior to demolition.
3. Dismantle, demolish, and remove interior and exterior structures associated with the Contractor's Lunchroom, Contractor's Change room, Highline Railroad, Main Office, Garage, Main Natural Gas Valve House, Baghouse and 200-foot Stack, Charge Building, remaining Blast Furnace Building, Blast Furnace Flue, Truck Loading and Spray Dryer Buildings, Acid Plant Cooling Towers, Sand Filters, 400-foot D&L Stack, 200-foot Acid Stack, Acid Plant, Auto Shop, Pump Tank Building, Main Blower Building, Acid Plant Shop, Dust Building, Monier Flue, Blast Furnace Baghouse Buildings, 425-foot Blast Furnace Stack, Ore Unloading Building, Sample Mill, Crushing Mill, and Thawhouse, as shown in the Plan Sheets.

3A. ADDITIVE ALTERNATIVE A: Remove all interior and exterior structures within the areas of the remainder of the Highline Railroad, Locomotive Crane

Shed, B.F. Office, B.F. Lunchroom, Power House, Pump House, Blast Furnace Heat Exchanger, Blacksmith Shop, Machine Shop, Carpenter Shop, Direct Smelt Building, Abandoned Breaking Floor, Breaking Floor, Sinter Stockpile Building, and associated stacks, as shown in the Plan Sheets. All structures will be removed to grade level. Clean concrete slabs and footings at or below grade level should be left intact. Brick encountered must be removed to at least three feet below grade level.

3B. ADDITIVE ALTERNATIVE B: Remove all interior and exterior structures within the areas of the Masons Shop, High Lead Welding Shop, Motor and Paint Shop, Oil HS, Paint Storage Building, Refractory Storage, Meeting Room, and Zinc Plant O₂ Building, as shown in the Plan Sheets. All structures will be removed to grade level. Clean concrete slabs and footings at or below grade level should be left intact. Brick encountered must be removed to at least three feet below grade level.

4. Blank and seal all flues and ducts breached during the demolition at the demolition boundary limits.
5. Permanently barricade all remaining walkways and elevated platforms at the demolition boundary limits to conform to OSHA regulations.
6. Permanently abandon underground utilities and sumps as shown in Plan Sheets.
7. Repair any damage to property (identified to remain) resulting from demolition activities. Property includes but is not limited to ground water sampling wells, sump enclosures, power poles, roadways, fences and gates, and drainage pipes. Pavement outside of cap areas will be repaired by the Contractor if damaged during demolition.
8. Except for brick, structures will be removed to exterior grade level. Concrete slabs and footings at or below grade level should be left intact unless otherwise indicated on the drawings. Brick structures must be removed to at least three feet below exterior grade level.
9. After completion of demolition, remove all dust, debris, and lead residue from foundations. This may include, but is not limited to sweeping, shoveling, and vacuuming.
10. ADDITIVE ALTERNATIVES C, D, AND E: After approval by Owner, backfill areas shown on drawings with suitable fill material to bring to final grade. Fumed slag that is located within the plant boundaries may be used as backfill. Contractor will be responsible for ripping and sizing fumed slag for backfill. Concrete demolition debris may also be used as backfill if it is clean. Sampling of exposed soils will need to be conducted by the Owner prior to placement of backfill or capping materials.
11. ADDITIVE ALTERNATIVES C, D, AND E: Grade and contour site to drain prior to capping. Contractor shall provide an as-built survey documenting positive drainage away from capped areas and runoff conveyance slopes to drain inlets. Storm water runoff from the demolition site must discharge to the Asarco, LLC facilities storm water control system.

12. ADDITIVE ALTERNATIVES C, D, AND E: Place temporary caps over the demolition areas shown on drawings and secure with batten strips along the edges and sandbags over the interior.
13. ADDITIVE ALTERNATIVES C, D, AND E: Extend existing monitoring wells to a height of 24 inches above the cap elevation and seal cap liner around wells with suitable pipe boots and clamps.
14. Install new gates and fencing as necessary to provide site security both during and after work hours. Contractor is responsible for securing the work site.

Project Specific Work Plan

- A. Prepare a Decontamination and Demolition Work Plan (Work Plan) that contains, at a minimum, the following elements:

1. Overview of Project
2. Scope of Work
3. Permitting
4. Storm Water Protection
5. Fugitive Dust Control
6. Asbestos Containing Material (ACM) Abatement
7. Cleaning
8. Demolition
9. Waste Management
10. Asset Recovery
11. Decontamination
12. Demobilization
13. Grading and Capping
14. Project Schedule
15. Mercury Abatement
16. Environmental Health and Safety and
17. Environmental Protection.

Provide detailed descriptions of the following topics in the appropriate section of the Work Plan.

Cleaning Plan

1. List methods and procedures for each building.
2. Management and removal of wastes, such as the catalyst in the Acid Converter facility, prior to demolition.
3. Training and PPE proposed for cleaning.

Demolition Plan

1. Demolition method used for stack demolition, including how dust will be controlled and adjacent facilities protected.
2. Training and Personal Protective Equipment (PPE) proposed for acid piping demolition.
3. Neutralization methods to be used for acid and potential acid spills.

Waste Management Plan

1. Disposal methods and procedures
2. Disposal and temporary storage locations
3. Permits required for waste management and disposal, which may include but is not limited to MSDS protocols, OSHA rules and regulations, MDEQ regulations, and EPA regulations.

Environmental Health and Safety Plan

1. PPE requirements for each work task.
 2. Methods and procedures for maintaining and cleaning change room, shower, and lunchroom facilities.
- B. The draft Work Plan must be submitted to the Montana Department of Environmental Quality (MDEQ) for review and approval. The Contractor will be responsible for responding to MDEQ comments (including meeting with MDEQ), revising the Work Plan, and finalizing the Work Plan.

Owner's Responsibility

With the exception of the following items that will be provided by the Owner, the Contractor will supply all labor, tools, equipment, materials and incidentals necessary to complete the 2007 Cleaning & Demolition Project in accordance with project drawings and specifications and in compliance with the Asarco East Helena Plant environmental health and safety rules and regulations.

The Owner will:

- A. Provide shower and lunchroom facilities (limited space) for the Contractor's employees.
- B. Provide portable toilet (up to three) for the Contractor's employees.
- C. De-energize all utilities servicing the equipment to be demolished.
- D. Provide switching service to weigh and spot rail cars for the removal of salvaged steel. The switching service is contingent upon the serviceability of the Owner's locomotive crane.

104.11 SCOPE OF WORK FOR THE CAMU PHASE 2 CELL PROJECT

(Add the following new subsection.)

Project Specific Work

The CAMU Phase 2 Cell for the East Helena Plant will contain demolition debris and wastes from current remedial cleanup activities. Portions of this Contract include tasks that involve hazardous and regulated waste. During the performance of these tasks, the Contractor is responsible for the compliance of all appropriate regulations and safety standards. The CAMU Phase 2 Cell will be constructed to meet the Performance Standards stated in 40 CFR

264 subpart N and EPA guidance. To complete this project the Contractor shall provide or perform the following Work (see Plan Sheets and Specifications for additional details):

1. Construct paved access roads to the site.
2. Construct site access control gates and fencing and storm water BMPs.
3. Excavate cell, segregating clay-rich soil and topsoil from other soil.
4. Prepare subgrade.
5. Construct compacted clay liner.
6. Construct two layers of flexible membrane liners and drains.
7. Construct leachate removal structures.
8. Construct cushion layer from crushed brick and concrete.
9. Load, haul, place, and compact waste and demolition debris into cell.
- 9a. ADDITIVE ALTERNATIVE F: Remove waste materials from the Ringling Building and dispose of them in the CAMU.
10. Fill cell and grade to drain.
11. Roll surface smooth and cap with cushion fabric and liner.
12. Construct storm water retention pond.
13. Construct security fencing.
14. Seed all disturbance to grass.
15. Completely clean (vacuum) Bailey Building and clean (shovel) Ore Storage Building. Ore Storage Building may be used as a temporary waste containment building after it has been cleaned.

RCRA Class C Type Landfill Cell

The bottom half of the landfill, called the cell, includes primary and secondary liner systems, leachate collection and detection drain systems, and a cushion layer to protect the liners and drains. The primary liner, 60-mil HDPE flexible membrane, underlies the waste material, but is separated from the waste by a construction geotextile and a 250-mil geonet. The secondary liner system, a composite liner, underlies the primary liner and is separated from the primary liner by another 250-mil geonet layer. The composite liner consists of a 3-foot thick layer of compacted clay overlain by a 60-mil HDPE flexible membrane. The compacted clay liner (CCL) will be constructed from local borrow that is segregated for this purpose during excavation of the cell. The Engineer will assist with identifying soil that is suitable for use in construction of the CCL and will provide soil testing to verify the suitability of the chosen soil. The cushion layer is a 12-inch thick layer of crushed concrete and brick that has been reduced to a uniform pea-gravel-size material.

The geometry of the Phase 2 Cell area includes a 3.7 acre bottom excavated approximately 8 feet deep that is sloped towards a sump in the northwest corner of the cell. The sides of the cell extend to the surface at a 3:1 slope on the inside of the cell. The total footprint of the cell covers 4.6 acres.

The leachate collection and detection removal structures consist of two, twenty-four inch HDPE pipe manholes that will need to be fused to all three flexible membranes. Perforated pipe will convey leachate from the collection system into one of the manholes and from the

detection system into the other. These manholes will extend up through the cell and cap and terminate a couple of feet above the top surface of the CAMU with locking lids.

Waste and Demolition Debris

Eventually 70,000 cubic yards of waste material may be generated from the plant site demolition and disposed of in the Phase 2 Cell. Wastes to be placed in the cell are primarily soils and demolition debris containing elevated arsenic and metals concentrations, with the primary metals being cadmium and lead. Only HAZWOPER trained personnel may work on the site during the placement of waste and until installation of the cap.

Waste soils and demolition debris will be placed and compacted in the cell using methods that minimize voids, settlement, and damage to the liners. A layer of crushed brick or concrete will be the first material placed in the cell. Individual particles must be less than 3/8-inch in diameter. Waste and demolition debris will be placed and compacted in the cell, using padfoot or similar type rollers, in lifts not to exceed 2 feet thick. Bulk concrete will be broken or otherwise reduced in size not to exceed 2 feet in height prior to being placed in the cell. Although most will be recycled, metals to go in the CAMU will be flattened and/or cut as necessary to minimize voids, settlement and damage to the liners. Long debris items (e.g. timbers, pipe or steel beams) will be placed horizontally in the fill lifts and care will be taken to compact adjacent fill. Other materials will be crushed in the compaction process to minimize voids. Special care will be taken near the sides of the cell to place cushion material against the liner prior to waste placement.

Due to timing or funding constraints, it will likely take several years to complete the demolition and filling of the CAMU Phase 2 cell. The table below shows the current plan for annual waste placement volume in the CAMU Phase 2 cell.

Year	Volume
2007	42,373 cy
2008	24,795 cy
2009	2,100 cy

At the end of the project, the cell will be capped with a flexible membrane and secured in an edge trench and with sand bags. The top of the waste will be graded to ensure positive drainage off of the CAMU Phase 2 cell.

A dust control program will be implemented to minimize the creation and spread of dust during the excavating, crushing, loading, hauling, placing and compacting activities. A fine mist of water or other approved means will be utilized to minimize dust during crushing and loading activities. Haul trucks will be covered and will have gate seals. Solid bottom-hauling vehicles will be used to minimize leakage potential. Haul routes will be swept continuously during hauling operations with a dry vacuum sweeper and watered, as needed, to minimize dust. Watering will be required during placing and compacting activities as needed for compaction and dust suppression.

Project Specific Work Plan

Prepare a CAMU Construction Work Plan (Work Plan) that contains, at a minimum, the following elements:

1. Overview of Project
2. Scope of Work
3. Permits required for work
4. Site Access Control Plan
5. Stormwater Protection Plan
6. Traffic Control Plan
7. Fugitive Dust Minimization Plan
8. Haul Road Maintenance Plan
9. Waste Management Plan
10. Compacted Clay Liner Construction Plan
11. Closure Plan
12. Project Schedule
13. Environmental Health and Safety Plan and
14. Environmental Protection Plan.

Owner Responsibility

With the exception of the following items that will be provided by the Owner, the Contractor will supply all labor, tools, equipment, materials and incidentals necessary to construct the CAMU in accordance with project drawings and specifications, in compliance with all applicable OSHA regulations and in compliance with the Asarco East Helena Plant environmental health and safety rules and regulations.

The following items will be provided by the Owner:

1. Nonpotable water from the Truckfill Station for dust control and compaction.
2. During the Waste Placement Phase, the Owner will provide limited space in the change room, shower facility and lunch room. Contractor will be responsible for janitorial service and maintenance of these facilities.
3. Initial survey monuments and bench marks.
4. Quality control and compaction tests. (Costs associated with retesting because of noncompliance will be the Contractor's responsibility.)

Surface Water and Erosion Controls

Temporary run-on diversion ditches will be constructed to prevent flow onto the construction site. Silt control fence will be installed around the perimeter of the site. During construction, the Contractor will be required to place a removable cover over the cell when there is a significant probability of a rainfall event. The removable cover will be used until the cell has been capped with a permanent geomembrane. Runoff contacting disturbed areas or from the top of the cover over waste materials will be routed to the runoff control pond. Runoff that comes in contact with waste materials will need to be pumped to a truck and disposed of in the Asarco East Helena HDS Plant. Compacted clay liners and waste material must be kept as dry as possible to minimize potential landfill leachate.

Permanent run-on diversion ditches will be constructed that are capable of preventing flow onto the active portion of the landfill during peak discharge from a 24-hour, 25-year storm. The Phase 2 cell site lies within a drainage area of 23.7 acres with a peak run-on of 4 cfs to be diverted around the site.

The runoff management system will collect and control at least the water volume resulting from a 24-hour, 25-year storm. A 1.06 acre-feet runoff control pond will be constructed and remain until vegetation is well established.

Access Road Improvements

All haul routes will be paved and maintained throughout the project. The paved access road will be 30 feet wide and will consist of 4 inches of asphalt and 6 inches of crushed base course over a compacted subgrade or embankment.

Revegetation

The surface of the CAMU Phase 2 cell and all off-plant areas disturbed during construction will be revegetated. Disturbed areas uphill from the permanent diversion ditches will be reseeded and mulched. All other disturbed areas will have seed, fertilizer and mulch applied.

Facility Fencing

The CAMU Phase 2 facility and Asarco East Helena Smelter facility will be fenced with a 6-foot high welded wire farm fence with a single strand barbed wire top section until completion of the final cap when a 6-foot high chain link fence with a 3-strand barbed wire top section will be used. Gates (24 feet wide) will be provided at the access roads. Project signs will be installed on each of the four sides of the CAMU Phase 2 perimeter fence. Temporary orange poly fence (safety fence) will be installed around the Asarco East Helena Smelter facility perimeter in places where demolition leads to gaps in the facility fence. Temporary fence should be used for the shortest duration possible and should be replaced with permanent facility fencing quickly to increase site security.

Environmental Health And Safety

The Contractor will prepare, submit and maintain an approvable written Site Environmental Health and Safety Plan. It is the Contractor's responsibility for implementing a safety program to protect workers from all environmental health and safety hazards associated with this project. Site environmental health and safety requirements are described in Section 110 of this document.

Site Access And Haul Control

The Contractor will control public access to the CAMU Phase 2 site and Asarco East Helena Smelter facility during cleaning, demolition, and construction. Temporary orange poly fence (safety fence) will be installed around the perimeter of the CAMU Phase 2 construction site to prevent access by the public and wildlife. Safety fence and silt control fence will be mounted on the same fence posts. Temporary locking gates will be installed at site access points. The Contractor will provide all traffic control associated with hauling and other construction activities between the plant and the CAMU Phase 2 site. The Contractor will be

responsible for site security until final acceptance of the work. A Contractor's field office will be maintained near the CAMU Phase 2 site throughout the project. The Contractor's superintendent will carry a cellular phone. Keep gates locked during non-work hours.

Surveys

Surveys include layout, grade control, quantity determination, extended groundwater monitoring wells and as-built surveys. The Contractor will complete all surveys and furnish all stakes, markers, tools and equipment required to lay out the work from bench marks and/or control point markers indicated by the Engineer. Copies of all survey notes will be given to the Engineer within one day after the survey is conducted. The Contractor will not disturb existing survey monuments or bench marks without the consent of the Engineer. A licensed land surveyor will replace markers that are accidentally disturbed by earthwork operations at the Contractor's expense. Existing groundwater monitoring wells and manhole lids will not be disturbed unless stated on plan sheets.

Quality Control System

THE CONTRACTOR IS RESPONSIBLE FOR QUALITY CONTROL WHICH IS CONSIDERED TO BE A MAJOR INSPECTABLE ITEM OF THIS CONTRACT. The Contractor will perform all Quality Control inspection and/or testing required by this contract unless otherwise specified. The Quality Control system must consist of personnel, plans, procedures, and organization necessary to provide materials, equipment, workmanship, fabrication, construction and operations that comply with contract requirements. The system will cover construction operations, including fabrication both on-site and off-site, and will be keyed to the proposed construction sequence. The Notice to Proceed will not be issued until the Contractor submits an acceptable Quality Control Plan.

The Contractor's Quality Control Plan will identify the personnel, procedures, instructions, records, forms, and as a minimum, will include the following:

- A description of the Quality Control (QC) management organization including an organizational chart.
- The number, classifications, qualifications, duties, responsibilities, and authorities of personnel. A copy of a letter, signed by an authorized official of the firm, which describes the responsibilities and delegates the authorities of the Quality Control manager will be furnished. The Quality Control manager must have a minimum of five years of documented experience in the primary areas of construction included in this contract. Include qualifications in the submitted plan for Owner approval. This contract does not require a full time Quality Control Manager. The individual assigned may have other duties within the contractor's organization but must commit a minimum average of two hours per day towards fulfilling the QC requirements of this section. Hours dedicated to this function will be annotated on the submitted QC records.
- The Contractor's Quality Control activities to be performed, include those of subcontractors, off-site fabricators, and suppliers. A job specific detailed work item list for inspection purposes will be developed by the contractor. The list will be broken into sections identical to the contract specifications and will contain all inspection actions necessary to ensure full compliance with the contract.

- Quality Control testing procedures including corrective actions to be taken where non-compliance is noted by the Quality Control Manager.
- Documentation format for Contractor's Quality Control activities and testing. The provided form is to be used for documenting daily inspections, corrective actions, etc.
- Procedures for ensuring As-Builts are accurate and updated daily.
- Methods to ensure scheduled appointments are met and documentation to verify arrival and departure times at the work site.
- A listing of all required mechanical and electrical, balancing, and operational tests.
- Safety program issues will be addressed in the Site Environmental Health and Safety Plan.

The Quality Control Plan will be reviewed and approved, if acceptable, by the Engineer. The Contractor will make such changes and additions necessary for clarity and completeness as requested. Acceptance is conditional and the Owner reserves the right to require the Contractor to make changes in the Quality Control Plan, personnel, and operations to correct deficiencies found by the Engineer during performance of work. No change will be implemented prior to acceptance in writing by the Owner. The Contractor will submit four copies of the proposed Quality Control Plan for approval not more than 15 days after Contract Award.

The Quality Control Records will contain daily inspection reports for all work accomplished. Specific items of work checked each day will be annotated. All work-in-place must be certified as complying with the contract plans and specifications. Non-compliance items must be clearly noted. Corrective actions must be outlined and detailed for non-compliance items. The Contractor will maintain daily records, which will be on-the-job site and available for review by the Engineer. Daily reports will be signed by the designated Quality Control Manager and will indicate hours spent on Quality Control that day. A copy of the QC daily reports will be given to the Engineer.

DAILY CONSTRUCTION REPORT

Project: _____ Date: _____
Client: _____ Project # _____
Contractor: _____ Project Manager: _____
Weather _____ Temperature _____
Wind _____ Precipitation _____

FIELD FORCE			
Name of Contractor	Prime or Subcontractor	No. of Persons on Project	Remarks

ENGINEER'S PERSONNEL			
Time	Name	Duties	Remarks

EQUIPMENT ON THE SITE	

CONSTRUCTION ACTIVITIES	

104.12 SUBMITTAL SCHEDULE *(Add new subsection.)*

Required contract submittals are summarized in Table 104-1. Submittals required by the Contract Documents that may have been inadvertently omitted from Table 104-1 must still be submitted.

TABLE 104-1. SUBMITTAL SCHEDULE

SECTION	TASK	SUBMITTAL DEADLINE
Access Roads	Obtain county road and railroad crossing permits	Copy to engineer 15 days prior to construction
	Material submittal for aggregate	Five days prior to construction
	Material submittal for pavement mix design	Five days prior to construction
	Gate shop drawings	Five days prior to construction
	Submit for approval detailed layout, design and contractor drawings for access routes at approximate locations shown on the Drawings.	15 days prior to construction
Temporary Erosion Controls	Submit SWPPP to Owner for approval and revise per Owner's comments.	20 days prior to construction
	Submit Notice of Intent (NOI) and Owner-approved SWPPP to regulatory agency and obtain MPDES Construction storm water discharge permit.	15 days prior to construction
HDPE, 60 mil	Material submittal for 60 mil HDPE	Five days prior to construction
	Panel drawings	Five days prior to construction
Drainage Geonet, 250 mil	Material submittal for Geonet, 250 mil	Five days prior to construction
	Panel drawings	Five days prior to construction
Geotextile Construction Fabric	Material submittal for Separation Geotextile	Five days prior to construction
	Material submittal for Drainage Geotextile	Five days prior to construction
Leachate Collection & Removal System	Materials submittals for pipe	Five days prior to construction
	Materials submittals for aggregate	Five days prior to construction
Runoff Control Pond	Material submittals riprap	Five days prior to construction
Environmental Health & Safety Requirements	Provide the Engineer adequate proof of required employee HAZWOPER training requirements	Five days prior to construction
Site Access & Traffic Controls	Traffic Control Plan	10 days prior to construction
Dust Control	Dust Control Plan	10 days prior to construction
Liner Cover, OR RPE 25	Material submittal for OR RPE 25 or equal	Five days prior to construction
Gas Migration Layer	Material submittal for pipe	Five days prior to construction
	Material submittal for aggregate	Five days prior to construction
	Material submittal for liner	Five days prior to construction
	Material submittal for boots	Five days prior to construction

TABLE 104-1. SUBMITTAL SCHEDULE (continued)

SECTION	TASK	SUBMITTAL DEADLINE
GCL cover	Material submittal for GCL cover	Five days prior to construction
HDPE, 40 mil	Material submittal for HDPE, 40 mil	Five days prior to construction
Cap Drainage Collection, 4" HDPE	Material submittal for pipe	Five days prior to construction
Drainage Layer Gravel	Material submittal for aggregate	Five days prior to construction
Cap Drainage Culvert, 6" HDPE	Material submittal for pipe	Five days prior to construction
Seed, Fertilize, & Mulch - Off Plant	Material submittal for seed	Five days prior to construction
	Material submittal for fertilizer	Five days prior to construction
	Material submittal for mulch	Five days prior to construction
Chain Link Fence with Appurtenances	Material submittal for fence	Five days prior to construction
	Shop drawings	Five days prior to construction
Construction Surveys	Provide Engineer with copy of survey data	Within 48 hours of completing each survey
Quality Control Plan and Management	Quality Control Plan per the Special Provisions	10 days prior to construction
	Daily Construction Reports	Due by end of day

SECTION 109 - MEASUREMENT AND PAYMENT

109.11 BID ITEM DESCRIPTION *(Add the following new subsection)*

This section describes work items included in each bid item. All of the incidentals items required to complete the work may not be listed. The cost of all such incidentals shall be included in the various related bid items. Unless otherwise noted, all bid items will be paid at the lump sum price bid for the item and no measurement of quantity will be made.

109.11.01 Mobilization

- A. General. Perform work in accordance with Standard Specification Section 109.09.
- B. Measurement and Payment. Measurement and payment will be in accordance with Section 109.09.

109.11.02 Cleaning and Demolition

- A. General. Perform work in accordance with Section 202.00.
- B. Work Included. Cleaning and demolition work as described in Section 104.10.

109.11.03 Backfill and Capping

- A. General. Perform work in accordance with the following standards specifications:
- Section 203 Excavation and Embankment
 - Section 206 Haul
 - Section 622 Geosynthetics Construction
 - Section 623 Flexible Membrane Liner
- B. Work Included. Backfill and capping work as described in Section 104.10.

109.11.04 Access Roads

- A. General. Perform work in accordance with the following Standard Specifications:
- Section 203 Excavation and Embankment
 - Section 401 Plant Mix Pavement
 - Section 607 Fences
 - Section 701 Aggregates
 - Section 702 Bituminous Materials
 - Section 712 Fencing Materials

B. Work Included.

- Obtain county road and railroad crossing permits and pay associated fees. Provide copies of permits to Engineer no later than 15 days prior to beginning construction of this item.
- Provide material submittals for aggregate, pavement mix design, and gate shop drawings.
- Submit for approval and revise, as needed, the detailed layout, design and contractor drawings for access routes at approximate locations shown on the Drawings.
- Perform clearing and grubbing required for access road construction.
- Prepare, grade, and compact subgrade.
- Place, grade and compact road embankment using local borrow.
- Provide, place and compact crushed base course.
- Provide, place and compact asphalt pavement in two 2-inch layers.
- Apply water as needed for compaction and dust suppression.
- Pay costs for quality control and compaction tests associated with re-testing because of non-compliance.

109.11.05 Temporary Erosion and Site Access Controls

A. General. Perform work in accordance with the following Standard Specifications:

- Section 203 Excavation and Embankment
- Section 208 Water Pollution Control and Stream Preservation
- Section 613 Riprap and Slope and Bank Protection
- Section 622 Geosynthetics Construction
- Section 607 Fences
- Section 712 Fencing Materials
- Section 713 Miscellaneous Materials

B. Work Included.

- Prepare a project Storm Water Pollution Prevention Plan (SWPPP) that addresses erosion and sediment control.
- Submit SWPPP to Owner for approval and revise per Owner's comments.
- Submit Notice of Intent (NOI) and Owner-approved SWPPP to regulatory agency and obtain MPDES Construction storm water discharge permit.
- Pay fees associated with obtaining MPDES Construction storm water discharge permit.
- Install and maintain all necessary construction Best Management Practices (BMPs).
- Install Silt control fence around the perimeter of all disturbed areas.
- Construct run-on diversion ditches.
- Provide and place a temporary cover over the cell when there is a significant probability of a rainfall event. The temporary cell cover will be used during the waste placement stage (until the cell has been capped with a temporary or permanent FML).

- Remove temporary controls after vegetation is established.
- Construct fencing and gates to secure site.

109.11.06 Excavation & Stockpile

A. General. Perform work in accordance with the following Standard Specifications:

- Section 201 Clearing and Grubbing
- Section 203 Excavation and Embankment
- Section 206 Haul

B. Work Included.

- Request utility locates.
- Perform clearing and grubbing.
- Excavate, load, haul and stockpile 8-inches of organic topsoil and another 16-inches of subsoil from the site of the CAMU Phase 2 Cell.
- Excavate the cell bottom to lines and grades shown on the drawings.
- Segregate clay-rich soils from sandier soils and load, haul, and stockpile separately.
- Apply water as needed for dust suppression;
- Ensure stockpiles are removed by the end of construction.
- Grade site to blend removed excavation stockpile areas into adjacent topography.

109.11.07 Subgrade Preparation, Grade & Compact

A. General. Perform work in accordance with the following Standard Specifications:

- Section 203 Excavation and Embankment

B. Work Included.

- Plowing, disking and any moistening required to obtain proper compaction of the bottom and sides of the CAMU Phase 2 cell.
- Grade and compact subgrade.
- Pay costs for quality control and compaction tests associated with re-testing because of non-compliance.
- Remove and replace soft or otherwise unsatisfactory material.
- Apply water as needed for compaction and dust suppression.

109.11.08 Compacted Clay Liner

A. General. Perform work in accordance with the following Standard Specifications:

- Section 203 Excavation and Embankment and additions or amendments which follow.

B. Work Included.

- Load, haul, place and compact clay soils from stockpiled excavation material.
- Disk or work embankment to achieve proper moisture content for compaction.
- Select proper lift thickness that is compatible with the equipment being used for compaction or proper equipment for the lift thickness desired.
- Apply water as needed for compaction and dust suppression.
- Roll surface smooth and prepare surface for HDPE installation.
- Pay costs for quality control and compaction tests associated with re-testing because of non-compliance with compaction standards.
- Remove and replace soft or otherwise unsatisfactory material with satisfactory material as directed by the Engineer.
- Control rate of construction to ensure that finished surface can be covered with liner before it has a chance to dry and crack.

109.11.09 HDPE, 60 mil

A. General. Perform work in accordance with the following Standard Specifications:

- Section 622 Geosynthetics Construction
- Section 623 Flexible Membrane Liner
- Section 713 Miscellaneous Materials

B. Work Included.

- Furnish, place, join and anchor 60-mil HDPE FML for primary and secondary cell liners.
- Conduct both destructive and non-destructive seam testing.
- Seam cell liners to leachate removal structures.

109.11.10 Drainage Geonet, 250 mil

A. General. Perform work in accordance with the following Standard Specifications:

- Section 622 Geosynthetics Construction
- Section 624 Geonet
- Section 713 Miscellaneous Materials

B. Work Included.

- Furnish, place, join and anchor 250 mil geonet for leachate collection and detection systems.

109.11.11 Geotextile Construction Fabric

A. General. Perform work in accordance with the following Standard Specifications:

- Section 622 Geosynthetics Construction
- Section 713 Miscellaneous Materials

B. Work Included.

- Furnish, place and anchor Separation Geotextile and Drainage Geotextile as shown on Drawings.

109.11.12 Leachate Removal Structures

A. General. Perform work in accordance with the following Standard Specifications:

- Section 603 Culverts, Storm Drains, Sanitary Sewers, Stockpasses, and Underpasses
- Section 701 Aggregates
- Section 707 Joint Materials
- Section 708 Concrete, Plastic, and Fiber Pipe

B. Work Included.

- Furnish and install riser pipes with locking lids set on concrete foundations as shown on the drawings.
- Furnish and install drain pipe, fittings, and drain aggregate to construct leachate detection and collection sumps as shown in the drawings.

109.11.13 Storm Water Retention Pond

A. General. Perform work in accordance with the following Standard Specifications:

- Section 201 Clearing and Grubbing
- Section 203 Excavation and Embankment

B. Work Included.

- Strip and stockpile topsoil and subsoil.
- Excavate pond and stockpile excavated soils.
- Apply water as needed for dust suppression.
- Construct riprap over-flow as shown in the drawings.
- Replace topsoil and seed.

109.11.14 Crush and Place Cushion Material

A. General. Perform work in accordance with the following Standard Specifications:

- Section 203 Excavation and Embankment and additions or amendments which follow.

B. Work Included.

- Crush and stockpile concrete and brick from demolition to produce a cushion material with a particle size less than 3/8-inch.
- Apply water as required to control dust during crushing.
- Control runoff from dust control watering and from stockpile.
- Load, haul, and place and cushion material over cell liners.
- Apply water as needed for dust suppression.

109.11.15 Load, Haul & Place Waste Materials

A. General. Perform work in accordance with the following Standard Specifications:

- Section 201 Clearing and Grubbing
- Section 202 Removal of Structures and Obstructions
- Section 203 Excavation and Embankment
- Section 206 Haul

B. Work Included.

- Load, haul, place, spread and compact waste materials and debris in CAMU Phase 2 cell.
- Cut and flatten metal items as necessary to minimize voids.
- No voids greater than one cubic foot will be allowed.
- With exception of ACM, Owner will require placement of debris in a manner that forms a homogeneous waste in CAMU Phase 2 (i.e., not all debris placed together but mixed relatively evenly throughout the CAMU Phase 2).
- No additional expenses will be allowed to consolidate waste materials to Owner's satisfaction.
- Haul trucks will be covered and will have gate seals. The contractor is required to apply gasket material or otherwise modify haul truck gates to ensure that the gates are tightly sealed. The Contractor is required to maintain gates in this condition.
- Place long debris items (e.g. timbers, pipe, steel beams, etc.) horizontally in the fill lifts.
- Break oversized concrete debris to a minimum of 2 feet in diameter.
- Provide water as needed for compaction and dust suppression.
- Compact wastes with sheepsfoot rollers in 2-foot lifts.
- Crush plastics, ceramic and glass material in compaction process to minimize voids.

109.11.16 Environmental Health & Safety Requirements

A. General. Perform work in accordance with the following:

- Special Provision Section 110 Safety
- OSHA 29 CFR 1910.120 (HAZWOPER)
- OSHA 29 CFR 1926.65
- OSHA 1926.62 (lead)
- OSHA 1926.1118 (arsenic)
- OSHA 1926.1127 (cadmium)
- All applicable regulations and specifications

B. Work Included.

- Identify and meet all safety standards that are applicable to this project;
- Provide all personnel working on the project with required orientation and training on the potential hazards anticipated and the appropriate use of safety equipment;
- Provide the Engineer adequate proof of required employee HAZWOPER training requirements;
- Monthly and weekly safety meetings shall be considered incidental;
- Develop and maintain for the duration of work activities at the Site, a written Site Environmental Health and Safety Plan that will effectively incorporate and implement all applicable requirements;
- As part of the Site Environmental Health and Safety Plan, develop and maintain for the duration of work activities at the Site, a written monitoring program as specified herein, to provide information necessary to comply with relevant worker environmental health and safety regulations;
- Make appropriate corrective actions as required for compliance;
- The costs for medical surveillance exams and biological monitoring shall be considered incidental;
- All required reporting shall be considered incidental;
- Any work necessary to comply with the requirements of Section 110, but not specifically mentioned, shall be incidental to the Environmental Health and Safety Requirements, and all costs therefore shall be included in the unit Contract prices of the Bid items;
- Provide all required personal protective equipment;
- Provide a full time Site Environmental Health and Safety Officer;
- During waste placement phase, require Contract employees to shower prior to leaving the job site. Contractor will be responsible for Contractor employee wages while showering;
- Require Contract employees to be fitted for a respirator. Contractor will be responsible for Contractor employee wages when being fitted for a respirator (approximately 30 - 45 minutes); and

109.11.17 Traffic Controls and Road Maintenance

A. General. Perform work in accordance with the following Standard Specifications:

- Section 201 Clearing and Grubbing
- Section 202 Removal of Structures and Obstructions
- Section 203 Excavation and Embankment
- Section 206 Haul
- Section 607 Fences
- Section 618 Traffic Control
- Section 712 Fencing Materials
- Section 715 Traffic Control Devices

B. Work Included.

- Prepare, submit, revise as required and maintain an approved Traffic Control Plan;
- Fees associated with obtaining county road permit;
- Provide all required traffic controls (labor, material, equipment, signs);
- Construct all temporary fences, including orange poly fence as needed to control access to the site;
- Construct all temporary gates needed to control access to the site;
- Gates in existing fences at access road crossings are under a separate item;
- All work necessary to prevent public and wildlife access to the CAMU Phase 2 site;
- Construct and maintain detour routes as needed;
- Provide water as needed for compaction and dust suppression;
- Conduct layout, quality control and as-built field surveys under a separate item; and

109.11.18 Dust Control and Haul Road Maintenance

A. General. Perform work in accordance with the following Standard Specifications:

- Section 203 Excavation and Embankment

B. Work Included.

- Dust Control Plan preparation, submittal, and revisions as required for owner approval.
- Minimize the creation and spread of dust during the excavating and loading on the plant, and placing and compacting activities in the CAMU Phase 2 and stockpiles.
- The Owner will supply non-potable water for compaction and dust suppression at fill station standpipes on the plant. The Contractor will be required to transport water to the point of use.
- A fine mist of water will be utilized to minimize dust during loading activities.
- Watering will be required during hauling, placing and compacting activities as needed for dust control.

- The Contractor will conduct continuous sweeping of the access roads using a dry vacuum sweeper during hauling operations.
- Solid bottom hauling vehicles will be used to minimize leakage potential.
- Road maintenance as required to maintain the surface without ruts, potholes or other deterioration.

109.11.19 CAMU Cover, OR RPE 25

A. General. Perform work in accordance with the following Standard Specifications:

- Section 622 Geosynthetics Construction
- Section 623 Flexible Membrane Liner
- Section 713 Miscellaneous Materials

B. Work Included.

- Perform quality control tests.
- Furnish, place, join and anchor OR RPE 25 for CAMU Cap Cover Liner.

109.11.20 Permanent Run-on Diversion Ditches

A. General. Perform work in accordance with the following Standard Specifications:

- Section 203 Excavation and Embankment
- Section 208 Water Pollution Control and Stream Preservation

B. Work Included.

- Excavate diversion ditches as shown on the drawings or staked in the field by the Engineer.
- Compact a berm on the downhill side of the ditch with excavated material as shown on the plans.
- Grade finished ditch section to blend with adjacent topography.

109.11.21 Seed, Fertilize & Mulch – Off Plant

A. General. Perform work in accordance with the following Standard Specifications:

- Special Provision Section.
- Section 610 Roadside Re-Vegetation.
- Section 713 Miscellaneous Materials.
- Section 627 Soil Amendments, Seedbed Preparation and Seed Mix.

B. Work Included.

- Submit required certifications for approval.
- Prepare seedbed, seed and fertilize all off-plant disturbed areas.
- Furnish, apply and incorporate fertilizer.
- Furnish and plant seed.

109.11.22 Fence with Appurtenances

A. General. Perform work in accordance with the following Standard Specifications:

- Section 201 Clearing and Grubbing;
- Section 607 Fences; and
- Section 712 Fencing Materials and in accordance with the Plans.

B. Work Included.

- Material submittals (fence) and shop drawings;
- All layout, grading and clearing;
- Furnish and install fence fabric, fence wire, steel posts, cable, rail, top caps, end and corner posts, gates, panels, braces, brackets and required hard ware;
- Excavation required for fence installation is incidental to this item;
- Furnish project signs and mount on fence is incidental to this item;

109.11.23 Quality Control Plan and Management

A. General. Perform work in accordance with the Special Provision Subsection 104.09.1, Scope of Work.

B. Work Included.

- Prepare, submit and revise as required, an approvable Quality Control Plan per the Special Provisions;
- Construction photographs are incidental to this item;
- Preparation and submittal of Daily Construction Reports is incidental to this item;
- As-Built Drawing preparation, daily updates and final submittals are incidental to this item.

SECTION 110 - SAFETY

110.01 GENERAL REQUIREMENTS

The Asarco East Helena Plant Contractor Site Environmental Health & Safety Plan is incorporated in its entirety into Section IX. Environmental Health and Safety procedures of Asarco, LLC must also be observed. Additional Environmental Health and Safety requirements are included in Section VI – General Provisions.

The Contractor will be responsible for preparing and submitting their own Environmental Health & Safety Plan prior to the start of work. The plan shall include additional plans as identified in Section VI – General Provisions.

The Contractor shall be responsible for identifying and meeting all safety standards that are applicable to this project. The Contractor shall hold harmless the Owner and Owners Representative from any claims made as a result of the Contractor's neglect in this regard.

For all work conducted on the Project, the Contractor shall ensure compliance with all safety and health provisions of the Federal Occupational Safety and Health Administration (OSHA) regulations and all other applicable federal, state, county, and local laws, regulations, ordinances, and codes. The Contractor shall also ensure compliance with requirements set forth herein, and any regulations that may be specified in other places within this contract. The Contractor's failure to thoroughly familiarize itself with the aforementioned environmental safety and health provisions shall not relieve the Contractor of responsibility for full compliance with the obligations and requirements set forth therein.

The Contractor shall have sole responsibility for the safety, efficiency, and adequacy of the Contractor's plant, appliances, and methods, and for any damage or injury resulting from their failure, or improper maintenance, use or operation. The Contractor shall be solely and completely responsible for the conditions at the Site, including environmental safety and health of all authorized persons and property in performance of the work. This requirement shall apply continuously, and not be limited to normal working hours. The required or implied duty of the Owners Representative to conduct construction review of the Contractor's performance shall be intended to include review of the Contractor's proposed environmental safety and health measures in, on or near the site, and does not relieve the Contractor of responsibility for compliance with applicable laws, regulations and requirements.

The Contractor shall observe and comply with all applicable laws, regulations and requirements. Such information, interpretation, or representation of laws, regulations, or ordinances referenced in the Contract Documents shall not take precedence over the law, regulation, of ordinance itself, nor relieve the Contractor of responsibility for determining the true current construction and content of such laws, regulations and ordinances.

The Contractor shall not permit any employee, in the performance of the Contract, to work under conditions that are hazardous to the employee. Should violations of the environmental safety and health requirements be called to the Contractor's attention by the Owners Representative or any authorized representative of a regulatory agency, the Contractor shall immediately correct the identified conditions.

In the event the Contractor fails or refuses to promptly comply with any compliance directive, the Owners Representative may issue an order to stop all or any part of the work. When compliance with the directive issue is accomplished, an Order to resume work will be issued. The Contractor shall not be entitled to any extension of time or any claim for damage or to any additional compensation for either the directive or the work suspension order.

Failure of the Owners Representative to order discontinuance of any or all of the Contractor's operations shall not relieve the Contractor of responsibility for safety.

The Contractor shall maintain in a manner acceptable to the Owners Representative an accurate record of, and shall report to the Owners Representative cases of death, occupational diseases, recordable injuries as defined by OSHA or any injury to the public incident to the performance of work under this Contract.

For the period of time during waste placement in the landfill and until final covering of the landfill with the HDPE/FML, the Contractor shall comply with all specified Environmental Safety and Health laws, regulations and requirements for Hazardous Waste Site Operations according to OSHA regulations 29 CFR 1926.65 (HAZWOPER). The Contractor will also comply with the OSHA substance specific standards for lead (29 CFR 1926.62), arsenic (29 CFR 1926.1118), cadmium (29 CFR 1926.1127) and asbestos (29 CFR 1926.1101). Only fully trained personnel may work on the site during this time period.

Also, the topsoil at the CAMU Phase 2 cell location contains low levels of lead. Stripping operations of this soil and the placement of this soil as top cover will be regulated according to OSHA's lead standard.

For other periods of time when the above activities are not being performed (e.g. construction of the CAMU repository), work will not be regulated under the HAZWOPER, lead, arsenic, and cadmium standards. However, the Contractor is responsible for meeting all safety standards that are applicable to this portion of the project.

Environmental Health and Safety training requirements for Contractor workers are dependent upon the type of work being performed. There are three distinct types of trained workers needed to complete project work.

TYPE	REQUIRED ENVIRONMENTAL HEALTH AND SAFETY TRAINING	WORK TASKS
GROUP A	None	General Work Force -- Off Plant
GROUP B	No 40 Hr OSHA	Topsoil Removal And Stockpile
	Blood Lead Tests	Topsoil Replacement
	No Physical	
	Respirator Fit Test	
	Site Specific Training	(Additional PPE = Respirator, Coveralls, Showers, Lunchroom)
GROUP C	40 Hr - HAZWOPER-OSHA	Load, Haul, Place And Compact Waste Materials And On-Plant Tasks
	Blood Lead Tests	Demolition
	Full Physical	Cleaning
	Respirator Fit Test	Backfill, Grading, and Capping
	Site Specific Training	(Additional PPE = Respirator, Coveralls, Showers, Lunchroom)
	Asbestos - 8 Hr Worker Awareness OSHA	

The Contractor shall furnish all materials, tools and labor necessary to perform the tasks outlined below.

A. 2007 Cleaning & Demolition Project

TASK	Required Environmental Health and Safety Training
Mobilization and set-up field office and related facilities	Group A
Pre Demolition Tasks (Lock and Tag Utilities, Remove Acid Catalyst, etc.)	Group C
Cleaning	Group C
Demolition	Group C
Post Demolition Tasks (Fence, Barricade walkways, Seal flues and ducts, etc.)	Group C
Load CAMU with appropriate waste	Group C
Properly Dispose of All solid/liquid waste that cannot go into CAMU	Group C
Backfill, Grade, and Cap Site	Group C
Extend and Survey Monitoring Wells	Group C
Prepare As-Built Survey	Group C
Final Cleaning	Group C

B. CAMU (RCRA Landfill) Construction

TASK	Required Environmental Health and Safety Training
Mobilization and set-up field office and related facilities	Group A
Site layout surveys	Group A
Install site access controls (temporary fence and gates)	Group A
Install storm water BMPs (temporary run-on diversion ditch, silt fence, etc.)	Group A
Construct access roads	Group A
Strip and stockpile topsoil and subsoil (upper 8")	Group B
Strip and stockpile subsoil (8" to 24")	Group A
Excavate and stockpile soils from CAMU cell (below 24" depth)	Group A
Grade, roll and compact liner subgrade	Group A
Place and compact Compacted Clay Liner (CCL)	Group A
Grade, roll and compact CCL surface for HDPE	Group A
Install secondary containment HDPE	Group A
Install secondary containment geonet	Group A
Install secondary containment leachate removal system	Group A
Install primary containment HDPE	Group A
Install primary containment geonet and geotextile	Group A
Install primary containment leachate removal system	Group A
Crush or otherwise break oversized concrete debris and brick into -3/8" or less dimensions	Group C
Traffic control	Group C
Dust control	Group C
Haul road maintenance and continuous sweeping	Group C
Load and haul waste soil and debris from plant	Group C
Place and compact waste soils and debris in CAMU	Group C
Construct permanent run-on diversion ditches, remove temporary run-on diversion ditches	Group A
Prepare seedbed and mulch, seed, & fertilize cap of CAMU & other disturbed areas	Group A
Install perimeter chain link fence, gates and signs	Group A
Final Cleaning	Group A
Final Contract Submittals	Group A

110.02 ENVIRONMENTAL SAFETY AND HEALTH REQUIREMENTS FOR HAZARDOUS WASTE OPERATIONS (Applies to Group C)

110.02.1 Hazardous Waste Operations

For the period of time when waste is being excavated and placed in the landfill until the final covering of the repository with the HDPE/FML, in addition to the requirements of paragraph 110.01, work will be regulated under OSHA standards 29 CFR 1926.65 (HAZWOPER), 29 CFR 1926.62 (Lead), 29 CFR 1926.1118 (Arsenic), 29 CFR 1926.1127 (Cadmium) and 29 CFR 1926.1101 (Asbestos). The materials being excavated and transported to the CAMU repository contain elevated levels of lead, arsenic and cadmium. Asbestos may also be encountered in materials being excavated and transported to the CAMU repository. The Contractor is responsible for compliance with these regulations and the requirements of paragraph 110.02.

110.02.2 Site Environmental Health and Safety Officer

The Contractor shall appoint a Site Environmental Safety and Health Officer who has experience in industrial hygiene, such as an Industrial Hygienist certified by the American Industrial Hygiene Association or approved equal and who is qualified by experience and training in hazardous waste operations. The Site Environmental Safety and Health Officer shall be qualified and authorized to monitor, supervise and enforce compliance with the Site Environmental Safety and Health Plan. A resume of the Site Environmental Safety and Health Officer's qualifications shall be submitted to the Owners Representative for review within ten (10) days of receiving the Notice to Proceed. The site Environmental Safety and Health Officer shall be present on-site at times during the period of time during waste excavation and placement in the CAMU repository until final covering of the repository with HDPE/FML or when the potential for encountering hazardous substances or situations exists. The Site Environmental Safety and Health Officer shall immediately notify the Owners Representative of any emergencies as soon as possible following an incident.

110.02.3 Personal Air Monitoring

The frequency of monitoring will be done in accordance with OSHA standards for lead, arsenic, cadmium and asbestos.

110.02.4 Personal Protective Equipment

As part of the Site Environmental Safety and Health Plan, the Contractor shall be responsible for contractor workers wearing required Personal Protective Equipment (PPE).

Required PPE includes a hard hat, safety glasses, hard-toed boots, coveralls, and respirator. The respirator needs to be used when driving vehicles, when there is dust in the air, when operating equipment, when handling materials destined for the CAMU repository, when handling any ground materials within the plant site, when stripping and handling topsoil material at the CAMU site and when personal air monitoring indicates respirators need to be worn. At all other times, the respirator needs to be worn around the neck.

110.02.5 Medical Monitoring

The Contractor is responsible for the Contractor employees medical monitoring program. For Contractor employees on this Site for more than 30 days, an initial medical examination and biological monitoring is required according to the OSHA standards for lead, arsenic, cadmium and asbestos. For Contractor employees on site for less than 30 days, only an initial blood lead analysis is required per the OSHA lead standard, unless the Contractor employee has been exposed to these substances for more than 30 days in the past 12 months.

The Contractor is also responsible to provide Contractor employees a medial examination to determine the employee's ability to use a respirator.

All Contractor employees will be required to have completed the medical examinations and biological monitoring prior to attending Asarco's Contractor Safety Training covered in paragraph 110.02.6.

The Contractor is responsible for subsequent medical monitoring including biological monitoring for lead every two (2) months for the first six (6) months of exposure. In addition to the requirements of OSHA standards, all Contractor employees will be required to receive subsequent medical examinations using medical procedures covered in the OSHA standards for lead, arsenic, cadmium and asbestos every six (6) months.

For each employee, the Contractor shall provide to the Owners Representative a statement from a licensed physician indicating that the employee can work in a lead, arsenic, cadmium and asbestos environment and that the employee is capable to use a respirator. Also, the Contractor shall provide to the Owners Representative a copy of each employee's biological monitoring results.

110.02.6 Training

Contract workers are required to receive training according to the OSHA HAZWOPER, lead, arsenic and cadmium standards. Contract workers are also required to receive training according to the OSHA asbestos standard (see Subsection 110.02.9).

The Contractor will provide the Owners Representative copies of each Contractor employees HAZWOPER training certificates at least five (5) days prior to beginning construction. Specific HAZWOPER training certificates includes the initial 40-hour, initial 8-hour supervisory training for supervisors, and current 8-hour refresher training.

The Contractor is responsible for providing its workers training regarding requirements of the Site Specific Environmental Health and Safety Plan. The Contractor will provide the Owners Representative documentation of each Contractor employee receiving this training. The Contractor is also responsible for all other required OSHA training specific to activities on this project.

110.02.7 Decontamination

Contract workers will be required to shower prior to leaving the project site. Showers are to be completed during work hours. Asarco will provide limited shower and change facilities, but Contractor is required to provide janitorial services and maintain facilities.

Equipment leaving the project site will be cleaned using the wash bay facility located at the plant site.

110.02.8 Environmental Health and Safety Plan

The Contractor shall develop and maintain for the duration of work activities at the Site a written Site Environmental Safety and Health Plan. This plan shall be submitted by the Contractor to the Owners Representative within ten (10) days after receiving the Notice to Proceed. This plan shall be in accordance with the OSHA HAZWOPER, lead, arsenic, and cadmium standards. It is the Contractor's responsibility for implementing a safety program to protect workers from all environmental safety and health hazards associated with this project. The Site Environmental Safety and Health Plan shall be available on the site for inspection by employees, their representatives, the Owners Representative, and regulatory personnel.

The Site Environmental Safety and Health Plan for work activities at the Site shall, at a minimum, include the following considerations:

1. Names of Key personnel and their roles, responsibilities, and scope of authority be clearly defined.
2. Environmental Safety and Health Risk analysis for each site task and operation.
3. Employee training requirements.
4. Engineering controls, work practices, and/or personal protective equipment to be used for each of the site tasks and operations being conducted.
5. Medical Surveillance requirements.
6. Frequency and types of air monitoring to be used. Methods of maintenance and calibration of monitoring equipment to be used.
7. Site control measures including identifying exclusion zones, contamination reduction zones, and support zones. Owner will provide a lunchroom that will be considered a support zone in the Environmental Health and Safety Plan.
8. Decontamination Procedures for personnel and equipment will be included in this section.

9. Emergency response plan which includes:

- a) Methods of communication to Asarco in accordance with their existing General Disaster/Incident Response Plan.
- b) Methods of communication to be used within the work site.
- c) Develop immediate incident command system to be used until the Owner's General Disaster/Incident Response Plan is implemented.

10. Confined space entry procedures (if applicable)

11. Spill containment plan.

110.02.9 Asbestos

It is suspected that asbestos-containing materials (ACM) may be present in the structure. This ACM may be in the form of transite siding, asbestos-cement pipe and pipe insulation (Thermal System Insulation, TSI). Contractor's crews will perform work associated with handling, transporting and placing ACM under the direct guidance of the Owner's designated Competent Person.

During removal of waste piles, the Contractor is responsible for identifying and notifying the Owners Representative of any ACM. To assist the Contractor in identifying ACM, the Contractor is responsible to provide its employees involved in the removal of ACM at least eight hours of training as required by OSHA standard 29 CFR 1926.1101 (k)(9). The Contractor shall submit to the Owners Representative documentation that these employees have this training.

In the event the Contractor identifies ACM, the Contractor shall cease work in the immediate area containing ACM and immediately notify the Owners Representative. Asarco will decide the manner in which the ACM will be handled and the actual procedures to be used in resuming the work. Although the actual procedures used in resuming the work shall depend upon the amount of ACM, the Owners Representative foresees the following alternatives of operation as possible:

1. Contractor to resume work as before the suspension.
2. Contractor to move work operations to another portion of the site until measures to remove ACM can be effected.

**110.03 ENVIRONMENTAL SAFETY AND HEALTH REQUIREMENTS FOR
MOVEMENT OF TOPSOIL FROM CAMU LOCATION (Applies to Group B)**

Work in Group B is regulated by OSHA's construction lead standard. The requirements found in section 110.02 apply to the work in Group B, with the following exceptions:

110.03.1 Site Safety Officer

No Site Safety Officer is required. However, the Contractor needs to provide a safety representative according to ~~Section X, Part 9b.~~ 110.02.2

110.03.2 Medical Monitoring

Biological monitoring is required according to OSHA's lead standard. A full medical examination is not required unless personal air monitoring indicates exposures exceeding the action level for lead and the employee will work in a lead environment for 30 days or more in a 12-month period.

110.03.3 Training

HAZWOPER training is not required to Group B work.

Contract workers in Group B are to receive training according to the OSHA lead standard. All contract workers will be required to attend the Contractor Safety Training provided by Asarco to satisfy the OSHA required lead training.

The Contractor is responsible for all other required OSHA training specific to activities on this project.

110.03.4 Environmental Health and Safety Plan

The Contractor does not need to develop and maintain a Site Environmental Safety and Health Plan for Group B work.

110.03.5 Asbestos

No asbestos is anticipated to be encountered during Group B work.

**110.04 ENVIRONMENTAL SAFETY AND HEALTH REQUIREMENTS FOR
EMPLOYEES AND SUBCONTRACTORS**

The Contractor will provide Asarco with Contractor OSHA Lead, Arsenic, Cadmium and Environmental Compliance Form for each employee working on the Asarco East Helena Plant Site.

ASARCO - EAST HELENA PLANT

Contractor OSHA Lead, Arsenic, Cadmium & Environmental Compliance

(required for each employee working on-site, including subcontractors)

Company Name: _____ Initial Date On-Site: _____

Employee Name: _____ Estimated # of Days _____

Job Classification: _____ On-Site (2007): _____

Exposure Monitoring:	OSHA Limits	
	AL	PEL
Lead (ug/m ³) _____	Lead 30 ug/m ³	50 ug/m ³
Arsenic (ug/m ³) _____	Arsenic 5 ug/m ³	10 ug/m ³
Cadmium (ug/m ³) _____	Cadmium 2.5 ug/m ³	5 ug/m ³

Compliance if Exposure Monitoring > AL < PEL (for less than 30 days exposure)

<u>Training</u>	<u>Medical</u>	<u>PPE</u>	<u>Work Practices</u>
<input type="checkbox"/> Lead (for Pb exposure) (29 CFR 1926.62 (l)) <input type="checkbox"/> Arsenic (for As exposure) (29 CFR 1910.1018 (o)(1)) <input type="checkbox"/> Cadmium (for Cd exposure) (29 CFR 1926.1127 (m)) <input type="checkbox"/> Initial/Refresher Hazwoper (29 CFR 1926.65 (e)) <input type="checkbox"/> Site Specific Hazwoper (29 CFR 1926.65 (b)) <input type="checkbox"/> Site Specific Environmental *	<input type="checkbox"/> Blood Lead/Zinc Protoporphryn (for any one day of exposure)	<input type="checkbox"/> Hard Hat <input type="checkbox"/> Hard Toed Boots <input type="checkbox"/> Safety Glasses	<input type="checkbox"/> N/A

Compliance if Exposure Monitoring > AL < PEL (for 30 or more days exposure)

<u>Training</u>	<u>Medical</u>	<u>PPE</u>	<u>Work Practices</u>
<input type="checkbox"/> Lead (for Pb exposure) (29 CFR 1926.62 (l)) <input type="checkbox"/> Arsenic (for As exposure) (29 CFR 1910.1018 (o)(1)) <input type="checkbox"/> Cadmium (for Cd exposure) (29 CFR 1926.1127 (m)) <input type="checkbox"/> Initial/Refresher Hazwoper (29 CFR 1926.65 (e)) <input type="checkbox"/> Site Specific Hazwoper (29 CFR 1926.65 (b)) <input type="checkbox"/> Site Specific Environmental *	<input type="checkbox"/> Blood Lead/Zinc Protoporphryn (Initially, every 2-months for 6-months, then every 6-months thereafter) <input type="checkbox"/> Medical Examination for Lead (29 CFR 1926.62 (j)(3)) <input type="checkbox"/> Medical Examination for Arsenic (29 CFR 1910.1018 (n)) <input type="checkbox"/> Medical Examination for Cadmium (29 CFR 1926.1127 (l))	<input type="checkbox"/> Hard Hat <input type="checkbox"/> Hard Toed Boots <input type="checkbox"/> Safety Glasses	<input type="checkbox"/> N/A

Compliance if Exposure Monitoring > PEL (for less than 30 days exposure)

<u>Training</u>	<u>Medical</u>	<u>PPE</u>	<u>Work Practices</u>
<input type="checkbox"/> Lead (for Pb exposure) (29 CFR 1926.62 (l)) <input type="checkbox"/> Arsenic (for As exposure) (29 CFR 1910.1018 (o)(1)) <input type="checkbox"/> Cadmium (for Cd exposure) (29 CFR 1926.1127 (m)) <input type="checkbox"/> Respiratory Protection (29 CFR 1910.134 (k)) <input type="checkbox"/> Initial/Refresher Hazwoper (29 CFR 1926.65 (e)) <input type="checkbox"/> Site Specific Hazwoper (29 CFR 1926.65 (b)) <input type="checkbox"/> Site Specific Environmental *	<input type="checkbox"/> Blood Lead/Zinc Protoporphryn (for any one day of exposure) <input type="checkbox"/> Evaluation to use a respirator	<input type="checkbox"/> Hard Hat <input type="checkbox"/> Hard Toed Boots <input type="checkbox"/> Safety Glasses <input type="checkbox"/> Respirator (see respirator compliance) <input type="checkbox"/> Coveralls (laundered/disposable) <input type="checkbox"/> Gloves (laundered/disposable)	<input type="checkbox"/> No Tobacco <input type="checkbox"/> No Food/Beverage <input type="checkbox"/> No Cosmetics <input type="checkbox"/> Clean Lunch Area <input type="checkbox"/> Clean Side Change Room <input type="checkbox"/> Showers Required <input type="checkbox"/> Dirty Side Change Room <input type="checkbox"/> Handwashing Facilities <input type="checkbox"/> Contaminated PPE Remains on Smelter Site

Compliance If Exposure Monitoring > PEL (for 30 or more days exposure)			
Training	Medical	PPE	Work Practices
<input type="checkbox"/> Lead (for Pb exposure) (29 CFR 1926.62 (l))	<input type="checkbox"/> Blood Lead/Zinc Protoporphyrin (Initially, every 2-months for 6-months, then every 6-months thereafter)	<input type="checkbox"/> Hard Hat	<input type="checkbox"/> No Tobacco
<input type="checkbox"/> Arsenic (for As exposure) (29 CFR 1910.1018 (o)(1))	<input type="checkbox"/> Medical Examination (29 CFR 1926.62 (j)(3))	<input type="checkbox"/> Hard Toed Boots	<input type="checkbox"/> No Food/Beverage
<input type="checkbox"/> Cadmium (for Cd exposure) (29 CFR 1926.1127 (m))	<input type="checkbox"/> Medical Examination for Arsenic (29 CFR 1910.1018 (n))	<input type="checkbox"/> Safety Glasses	<input type="checkbox"/> No Cosmetics
<input type="checkbox"/> Respiratory Protection (29 CFR 1910.134 (k))	<input type="checkbox"/> Medical Examination for Cadmium (29 CFR 1926.1127 (l))	<input type="checkbox"/> Respirator (see respirator compliance)	<input type="checkbox"/> Clean Lunch Area
<input type="checkbox"/> Initial/Refresher Hazwoper (29 CFR 1926.65 (e))	<input type="checkbox"/> Evaluation to use a respirator	<input type="checkbox"/> Coveralls (laundered/disposable)	<input type="checkbox"/> Clean Side Change Room
<input type="checkbox"/> Site Specific Hazwoper (29 CFR 1926.65 (b))		<input type="checkbox"/> Gloves (laundered/disposable)	<input type="checkbox"/> Showers Required
<input type="checkbox"/> Site Specific Environmental *			<input type="checkbox"/> Dirty Side Change Room
			<input type="checkbox"/> Handwashing Facilities
			<input type="checkbox"/> Contaminated PPE Remains on Smelter Site

Respirator Compliance If Exposure Monitoring > PEL		
Exposure Levels	Respirator Style	Fit Testing Procedure
Not Exceeding 10 X PEL	Air Purifying Half Mask with HEPA Filter	Qualitative/Quantitative
Not Exceeding 50 X PEL	Air Purifying Full Face with HEPA Filter	Qualitative/Quantitative
	Half Mask PAPR with HEPA Filter	
	Half Mask SAR Positive Pressure Mode	
Not Exceeding 1,000 X PEL	Full Face SAR Positive Pressure Mode	Qualitative/Quantitative
Not Exceeding 10,000 X PEL	Full Face SCBA Positive Pressure Mode	Qualitative/Quantitative

Employee Signature: _____ Date: _____

Supervisor Signature: _____ Date: _____

1 copy - Contractor, 1 copy - ASARCO

* = 3 videos (40 minutes) supplied by ASARCO

SECTION 111 – ENVIRONMENTAL PROCEDURES

111.01 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced. All references listed in these specifications are intended to be the current version or edition, unless specifically identified otherwise. The Contractor shall conform to the Occupational Safety & Health Act, Environmental Protection Agency, Montana Dept. of Environmental Quality, Asarco and all other Federal, State and Local environmental regulatory requirements.

29 CFR Occupational Safety and Health Administration Code of Federal Regulations

40 CFR Environmental Protection Agency Code of Federal Regulations

49 CFR Department of Transportation Code of Federal Regulations

111.02 EXECUTION

111.02.1 Permits and Fees

- A. No separate payment will be made for work covered under this section. The Contractor shall be responsible for payment of fees associated with environmental permits, application, and/or notices obtained by the Contractor. All costs associated with this section shall be included in the contract price. See Section VI – General Provisions for a list of applicable documents the Contractor shall provide and additional environmental requirements. The Contractor shall be responsible for payment of all fines/fees for violation or non-compliance with Federal, State, Regional and local laws and regulations.
- B. The Contractor shall be responsible for obtaining and complying with all environmental permits and commitments required by Federal, State, regional, and local environmental laws and regulations.

111.02.2 Air Quality

- A. Equipment operation, activities, or processes performed by the Contractor shall be in accordance with all Federal and State air emission and performance laws and standards.
- B. Burning of material by the Contractor is not allowed at the Asarco facility.
- C. Particulates - The contractor shall not operate a construction site or demolition project unless reasonable precautions are taken to control emissions of particulate matter. Such emissions of airborne particulate matter shall not exceed 20% opacity as defined in 40 CFR 60.
- D. Crushing – Contractor shall obtain necessary permits and provide necessary dust controls for crushing concrete and brick needed as cushion material in the CAMU Phase 2 Cell.

- E. Sound Intrusions - The Contractor shall keep construction activities under surveillance and control to minimize environment damage by noise. The Contractor shall comply with the provisions of the State of Montana rules.
- F. Ozone Depleting Chemicals (ODCs)
 - 1. The contractor shall ensure activities performed under this contract are in compliance any applicable local, state or federal requirements for ODCs.
 - 2. Air Conditioning and Refrigeration Equipment - Any maintenance, repair and demolition work to air conditioning and refrigeration equipment shall require that all CFC (Chlorofluorocarbons) handling standards be met. The contractor shall not furnish any equipment that requires the use of ozone depleting chemicals nor shall he vent or cause to be vented CFC or HCFC (Hydrochlorofluorocarbons) refrigerants or other mixtures containing CFCs to the atmosphere during repair, maintenance or demolition work on the equipment covered by this contract. The contractor shall have available refrigerant recovery or reclaim equipment to perform the work. Personnel who operate refrigerant reclaim or recycling equipment shall possess the necessary state and local certifications for operating the equipment. The contractor shall be responsible for meeting all requirements, permitting, licensing and certification required by state or local ordinance to work on refrigeration systems. Replacement compressors and other replacement equipment used in repairing CFC-containing systems shall be compatible with CFC replacement refrigerants.

111.02.3 Water Resources and Storm Water Discharge

- A. The Contractor shall monitor construction activities to prevent pollution of surface and ground waters. Toxic or hazardous chemicals shall not be applied to soil or vegetation unless otherwise indicated. The Contractor shall monitor all water areas affected by construction activities. For construction activities immediately adjacent to impaired surface waters, the Contractor shall be capable of quantifying sediment or pollutant loading to that surface water when required by State or Federally issued Clean Water Act permits.
- B. The contractor shall not discharge any contaminated materials, oils or greases into the storm drain system.

112.02.4 Toxics

- A. Asbestos and Asbestos Hazards - The Contractor shall conform to all the requirements of 29 CFR 1926.1101, Occupational Exposure to Asbestos. Typical suspect asbestos containing materials include floor and/or ceiling tile, tile mastic, roofing materials and flashing mastics, pipe and boiler insulation, wall coverings, sheet rock joint compound, transite materials, etc.

The contractor shall notify the Montana Department of Environmental Quality, Permitting & Compliance Division, Air & Waste Management Bureau, Asbestos Control

Program, PO Box 200901, Helena, MT. 59620-0901, of all demolition and renovation work where asbestos containing material removal quantities meet minimums specified for notification. (Demolition work is defined as any alteration of a structure where a load bearing beam is removed.) Notification is required for demolition work even if a facility contains no asbestos containing material (40 CFR 61.145(a)(2)).

- B. Paint and Paint Hazards – Existing Paint: Existing painted surfaces may contain lead based paint. The Contractor shall conform to all the requirements of 29 CFR 1926.62 Lead Exposure in Construction. Workers are to wear respirators unless air testing establishes that lower protection factors are sufficient. Engineering and work practice controls may be sufficient to reduce exposure to or below the PEL. If the lead PEL is exceeded all workers shall wear appropriate personal protective equipment. The Contractor shall adhere to all other requirements of 29 CFR 1926.62. The Contractor shall keep a steady spray of water on any demolition work that may cause exposures. Runoff shall be contained on the work site.

112.02.5 Hazardous Waste Procedures

- A. All hazardous waste, except those that come under Universal Waste Rules, must be managed and disposed of in accordance with 40 Code of Federal Regulations (40 CFR) Subchapter I, Parts 260-268. The contractor is responsible for all fines and penalties, which may stem from an EPA or State of Montana Department Environmental Quality hazardous waste inspection of his operation.

112.02.6 Solid Wastes

- A. The contractor is responsible for handling and disposal of all solid waste generated at the job site in accordance with requirements in Section VI – General Provisions.

END OF SECTION

SECTION VII

ASARCO LLC

SECTION VII

SPECIAL PROVISION

SPECIFICATIONS

The Standard Specifications for Road and Bridge Construction, edition of 1995, prepared by the Montana Department of Transportation and Montana Transportation Commission, hereinafter referred to as the "Standard Specifications," shall be applied to Project work as specified below and shall govern this Project and form the basis of this Contract, except as modified in these Contract Documents. Contractor shall note the 1995 Standard Specifications shall be used as modified herein without subsequent amendments or newer publications made by the Montana Department of Transportation and Montana Transportation Commission. The Standard Specifications are modified herein as detailed in the following divisions. Division and subdivision numbers refer to corresponding numbers of the Standard Specifications. Additional division or sections numbers may be used to specify items of work not included in the Standard Specifications.

Copies of the 1995 Standard Specifications may be obtained from Montana Department of Transportation, Contract Plans Section, 2701 Prospect Avenue, P.O. Box 201001, Helena, Montana 59620-1001, Telephone (406) 444-6215.

DIVISION 200 - EARTHWORK

DIVISION 600 - MISCELLANEOUS CONSTRUCTION

DIVISION 700 - MATERIALS

DIVISION 200 – EARTHWORK

202.00 REMOVAL OF STRUCTURE AND OBSTRUCTIONS

(Replace with the following section.)

202.01.1 Description of Work

Unless directed otherwise in the Contract Documents, the Contractor shall:

1. Remove and properly dispose of all structures, trash, rubbish and concrete walls to grade.
2. Any equipment salvageable metals or other products will be the Contractor's responsibility to remove and sell. Contractor price shall reflect a deduction for recoverable items.
3. Remove the materials from the demolition site in accordance with federal, state and local regulations.
4. Remove and dispose of appliances and other items that may contain refrigerants and mercury-containing materials in accordance with federal state and local regulations.
5. Disconnect all utility services or confirm that all utility services have been disconnected.
6. Perform site clearance, grading and capping.
7. Plug and abandon underground piping with flowable fill or pressure grouting.

202.01.2 Protection of Properties

A. Dust Control: The Contractor shall comply with applicable air pollution control requirements of federal, state or local regulations. The Contractor shall take appropriate actions to minimize atmospheric pollution. To minimize atmospheric pollution, the Owner shall have the authority to require that reasonable precautions be taken to prevent particulate matter from becoming airborne. Such reasonable precautions shall include, but not be limited to:

1. The use of water or chemicals for control of dusts in the demolition of existing buildings or structures or construction operations.
2. Covering, at all times when in motion, open-bodied trucks transporting materials likely to give rise to airborne dusts.

B. Requirements for the Reduction of Fire Hazards

1. Removal of Material: Before demolition of any part of any building, the Contractor shall remove all volatile or flammable materials, such as gasoline, kerosene, benzene, cleaning fluids, paints or thinners in containers, and similar substances.
2. Fire Extinguishing Equipment: The Contractor shall be responsible for having and maintaining the correct type and class of fire extinguisher on site. When a cutting torch or other equipment that might cause a fire is being used, a fire extinguisher shall be placed close at hand for instant use.
3. Fires: No fires of any kind will be permitted in the demolition work area.

C. Protection of Adjacent Property

1. The Contractor shall not damage or cause to be damaged any adjacent structures or structures identified to remain including but not limited to slabs or pavements outside of the capping area, existing concrete, utilities, existing monitoring wells, or any other property adjacent to parcels released for demolition whether or not the property is scheduled for future demolition. The Contractor shall provide such sheeting and shoring as required to protect adjacent property during demolition. Care must also be taken to prevent the spread of dust and flying particles.
2. The Contractor shall restore any damaged areas to existing conditions.

202.01.3 Risk of Loss

The Contractor shall accept the site in its present condition and shall inspect the site for its character and the type of structures to be demolished. The Owner assumes no responsibility for the condition of existing buildings, structures, and other property within the demolition area, or the condition of the property before or after the solicitation for proposals. No adjustment of proposal price or allowance for any change in conditions that occur after the acceptance of the lowest responsible, responsive proposal will be allowed.

202.01.4 Permits and Fees

The Contractor shall obtain all the necessary permits and pay all permit fees that are required in conjunction with the demolition work.

202.01.5 Other Requirements

The Contractor shall also conduct all demolition activities in accordance with requirements in Section VI – General Provisions and the Plan Sheets.

202.02 DEMOLITION SCHEDULE

The Contractor shall be responsible for providing the Owner with a minimum of 48 hours advance notification prior to beginning the execution of demolition of any structure. The Contractor shall not proceed until approval has been obtained from Asarco, the bankruptcy court and all regulatory agencies responsible for reviewing and approving work plans.

202.02.1 Salvage of Demolition Materials

The Contractor shall be allowed to salvage demolition materials only from structures identified on the plans for demolition.

202.02.2 Demolition and Removal

A. Structural Parts of Buildings

No wall or part thereof shall be permitted to fall outwardly from any building except through controlled means or methods which will ensure safety and minimize dust, noise and other nuisance.

B. Foundation Walls

Footings and foundations shall be removed to exterior grade unless shown differently on plans or constructed of brick, which shall be removed to 3 feet below exterior grade.

202.02.3 Monitoring Wells

All monitoring wells shall be protected at all times and shall not be damaged during demolition. Contractor shall be responsible to reimburse the Owner should well replacement be necessary due to Contractor activities. All well extensions and completions shall be vertical and maintain the integrity of the existing PVC casing. All well extensions shall be done by a licensed monitoring well constructor in accordance with Montana Department of Natural Resources and Conservation (MDNRC) monitoring well construction requirements. Extended wells must be surveyed in by a licensed surveyor to determine the new casing elevation.

202.02.4 Disposal of Demolition Debris and Solid Waste

A. Debris

All materials, rubbish, and trash shall be removed from the demolition area.

B. Disposal of Demolition Debris and Solid Waste

All debris and solid waste shall be delivered by the Contractor to the CAMU or recycled by the Contractor.

C. Asbestos Abatement

The handling of asbestos material is subject to all applicable state and federal mandates. An asbestos survey is available from the Owner as part of this plan, but the Contractor is responsible to identify and properly dispose of all asbestos material. The Contractor shall comply with applicable regulations regarding its handling and disposal. The contractor shall have asbestos removed by a licensed abatement contractor as part of this contract.

D. Freon Removal and Disposal

The handling of Freon containing appliances is subject to all applicable state and federal mandates and regulations. The Contractor shall be responsible for the identification and removal of disposal of the material in accordance with applicable regulations. All costs

associated with said removal and disposal shall be considered incidental and shall be included in the lump sum bid for cleaning and demolition.

E. Mercury Removal and Disposal

The handling of any fluorescent lighting fixtures and transformers or ballasts containing mercury is subject to all applicable state and federal mandates and regulations. The Contractor shall be responsible for the removal and disposal of the material in accordance with applicable regulations. All costs associated with said removal and disposal shall be considered incidental and shall be included in the lump sum bid for cleaning and demolition.

F. Acid Plant Converter Catalyst Removal and Disposal

Remove catalyst contained in the Acid Plant Converter with a vacuum truck prior to demolition of the structure. Special handling of this material shall be considered incidental to cleaning and demolition of this structure.

202.02.5 Plug and Abandon Underground Piping

Plug and abandon underground piping as shown on drawings. Plug piping larger than 12 inches with flowable fill where possible. Use pressure grouting for all other piping. Flush all conduits with water and blow them out with compressed air.

Once cleaned, pressure-grout the piping using a pressure not exceeding 100 psi (690 kPa). Continue grouting until a steady flow of grout exits from the pipe outlet. Seal the outlet, then the inlet with the grout under pressure. Maintain the final grout pressure at between 50 to 100 psi (345 to 590 kPa).

202.02.6 Backfill, Grading and Clean Up

A. Backfill

On-site fumed slag may be used as backfill material. Any borrow or fill material shall be approved by the Owner before and during the placing of the material. All depressions on the property shall be filled, compacted, and graded to a uniform slope with drainage toward drain inlets.

B. Compaction

All excavations or low areas shall be backfilled with acceptable material and compacted to properly support placement of liner capping materials without future settlement.

C. Grading

The site shall be graded to conform to all surrounding areas and shall be finished to have uniform surface that shall not permit ponding of water. The Contractor shall grade and shape the site to drain towards drain inlets, complete fine grading and final clean up as part of the lump sum price for demolition. Contractor shall provide an as-built survey showing site drainage to drain inlets without ponding of water.

D. Final Cleaning

Before acceptance of the demolition work, the Contractor shall remove all unused material and rubbish from the site of the work, remedy any objectionable conditions the Contractor may have created, and leave the property in a neat and presentable condition. The Contractor shall not make agreements that allow salvaged or unused material to remain on private property. All ground occupied by the Contractor in connection with the work shall be restored.

Final cleaning shall be subject to approval of the Owner and in accordance with applicable regulations.

202.02.7 Authorized Workers

Only the Contractor and its employees or approved subcontractors are allowed to demolish, dismantle, detach or dispose of any part of the demolition structures or its contents. All workers shall be properly safety trained in accordance with all applicable plant, local, state and federal regulations.

SECTION 203 - EXCAVATION AND EMBANKMENT:

Add the following subsections to this section.

203.06 DESCRIPTION OF CAMU PROJECT EARTHWORK

This specification covers the requirements for labor, supervision, equipment and materials associated with the earthwork operations shown on or implied by the design Drawings, or herein specified. Earthwork activities shall include, but not be limited to project layout, soil testing, site drainage, dust control, clearing, disposal, excavation, subgrade preparation, protection and removal of known underground utilities, fill and backfill, embankments, finish grading and site restoration.

203.07 CONSTRUCTION REQUIREMENTS OF CAMU PROJECT EARTHWORK

203.07.1 Grade Control and Layout of Work

The Contractor shall furnish all stakes, markers, tools, equipment and labor required to lay out the work from bench marks and/or control point markers indicated on the drawings. The Contractor shall not disturb existing survey monuments or bench marks without the consent of the Engineer. Markers that are accidentally disturbed by earthwork operations shall be replaced at the Contractor's expense by a licensed land surveyor. Copies of all survey notes will be given to the Engineer within one day after survey is conducted. Restaking and remarking of layout stakes caused by misinterpretation of the specifications will be at the Contractor's expense. It is recommended that the surveyor meet with the Engineer to review grades and dimensions, prior to commencing layout surveys. **During construction of the compacted clay liner, the Contractor must provide a system for tracking stakes used for layout to ensure that none are lost within the compacted clay layer.**

203.07.2 Inspection and Testing

The Owner may employ an independent laboratory for inspection and testing. The Owner will coordinate this testing with the Contractor, and the Contractor shall cooperate with the laboratory. The Owner will pay for these services. However, if initial testing indicates that the Contractor has not complied with the Contract Documents, then the costs of subsequent testing associated with the non-compliance will be deducted from the Contract price. Testing will include but not be limited to the tests listed in Tables 1, 203-1 and 203-2.

203.07.3 Protection and Safety

Open Excavations. Provide barricades and/or other safety equipment as required to protect any equipment, vehicles and workers from any open excavation.

- A. Protection of Property. The Contractor shall protect adjacent property and avoid damage to such property. Adjacent property damaged due to the Contractor's operations shall be repaired or replaced. The repairs and/or replacement shall be equal to existing improvements and shall match existing finish and dimensions.
- B. Utilities. The Contractor is responsible for obtaining off-site utility locations as required by law. He will notify the Engineer prior to digging adjacent to utilities.

203.07.4 Subgrade and Fill Protection

During construction, fills and excavations shall be kept shaped and drained. Ditches and drains along subgrade shall be maintained in such a manner as to drain effectively at all times.

Finished subgrade shall not be disturbed by traffic or other operations and shall be protected and maintained by the Contractor until completion and acceptance of the work. The storage or stockpiling of materials on the finished subgrade will not be permitted.

203.07.5 Site Drainage

Excavation, fill and backfill work areas shall be continually and effectively drained. Water shall not be permitted to accumulate in excavations or foundation areas. The Contractor shall construct suitable dikes, drains or provide pumping equipment, as required, to divert water flows away from the work areas.

203.07.6 Dust Control and Haul Road Maintenance

Control all dust produced from the project site. Prevent the spread of dust and avoid creation of a nuisance in the surrounding area. The Contractor shall prepare and submit a Dust Control Plan to the Owner for approval before construction begins. The Dust Control Plan will address methods to be used to minimize dust during sodding, hauling waste placement, grading and earthwork operations. It will also describe haul road sweeping and maintenance operations.

TABLE 203-1. TESTING OF SOIL PRIOR TO COMPACTION			
Parameter	Test Method	Minimum Frequency (1)	Test Rejection Criteria
Soil Content	Visual	Continuous	Reject all material with particles larger than allowed, unmixed material or other deleterious materials.
Scarification	Visual	Continuous	Scarification depth less than specification.
Moisture Density Curve	AASHTO T99 Method (ASTM D 698)	1 per 5000 cy	NA
Construction Stakes	Inventory	End of each construction day	Days work may be rejected if any stakes or portions of stakes are missing.

NOTES

(1) Additional tests may be required by the inspector in response to charges in material, or other problems noted by the inspector.

TABLE 203-2. TESTING OF SOIL AFTER COMPACTION			
Parameter	Test Method	Minimum Frequency (2)	Test Rejection Criteria
Number of Passes, Equipment Type & Weight (1)	Visual	1 per acre per lift	Number of passes must exceed minimum determined in test pad analysis with similar equipment type and weight.
In-Situ Nuclear Density	ASTM D 2922	5 per acre/lift	No more than 20% outliers with no dry densities less than 6 pounds per cubic foot below required value.
In-Situ Sand Cone Density	ASTM D 1556	1 per every 20 tests	See Note 4
Oven Water Content	ASTM D 2216	1 per 500 cy	No more than 20% outliers. No water content less than 2% or more than 3% of allowable value.
Hydraulic Conductivity	ASTM D 5084 (remolded)	1 per 3,500 cy (1 per acre)	No more than 5% samples with permeability greater than 5×10^{-7} cm/sec.

NOTES

- (1) Equipment and weight of compactors must be similar to or have similar compactive effort to those used in test pad analysis.
- (2) Additional tests may be necessary depending on site conditions as determined by the inspector.
- (3) Outliers may not be concentrated in one area or lift.
- (4) Use to corroborate Density Tests.

203.07.7 Excavation

- A. General Requirements. The Contractor shall excavate every type of material encountered within the limits of the project, to the lines, grades and elevations indicated and as specified herein. Test pit and boring logs for the CAMU site are available from the Engineer.
- B. Excavations For Cell Construction
1. The excavation shall be carried down to the elevations shown on the design Drawings. If suitable material in the bottom of the excavation is removed for the Contractor's convenience, the subgrade shall be restored by the Contractor and at his expense, to a condition at least equal to the undisturbed foundation as determined by the Engineer.
 2. The Contractor shall remove any surface layer of unsuitable material at the planned grade of the excavation, as determined by the Engineer, from the site.
- C. Excavations for Ditches and Drainage Structures. Excavations for ditches and drainage structures shall be accomplished by cutting accurately the line, grade and cross-section required. Trenches and pits shall be of sufficient size to accommodate the installation of piping and structures. Excessive open ditch excavation shall be backfilled with satisfactory materials to the grades shown on the design Drawings. The Contractor shall maintain all excavations free from detrimental quantities of brush, sticks, trash and other debris.
- D. Soil Salvage
1. The Contractor shall stockpile the top 8 inches of excavated soil for use as topsoil in the landfill cap.
 2. The Contractor shall stockpile the next 16 inches of soil for use as subsoil in the landfill cap.
 3. The remainder of excavated clayey sand clay, and silt (sandy loam) material from the landfill cell excavation shall be stockpiled for use in construction of the compacted clay liner and compacted clay cover. Clay rich soils will be segregated and stockpiled separately from sandier soils. The Engineer will determine material types. Determination limits to be concurred by Contractor.
 4. Stockpiles shall be covered or provided with runoff containment in accordance with best management practices for preventing storm water pollution.
- E. Subgrade Preparations
1. General Requirements. Subgrade shall be shaped to the line, grade and cross-section and compacted as specified for all required embankments and in the CAMU

cell. This operation shall include plowing, disking and any moistening or aeration required to obtain proper compaction. Soft or otherwise unsatisfactory material shall be removed and replaced with satisfactory material as directed by the Engineer.

Low areas resulting from the removal of unsatisfactory material shall be brought up to the required grade with satisfactory materials, and the entire subgrade shall be shaped to the line, grade and cross-section and compacted as specified.

After rolling, the elevation of the finished subgrade shall not vary more than 0.2 foot from the established grade and approved cross-section.

2. **Compaction.** Compaction shall be accomplished by sheepfoot rollers to at least 90 percent of Proctor maximum dry density.

203.07.8 Embankment

A. Materials

1. **Compacted Clay Liner.** The compacted clay liner shall consist of clay-rich sandy loam material from excavation required for the landfill cell. **Cobbles and rock fragments having maximum dimensions of more than 2 inches shall not be used in these liners.** Should cobbles and rock fragments of such size be found in otherwise approved earth fill materials, **they shall be removed** by the Contractor before the materials in the earth fill are rolled and compacted. No brush, roots, sod, or other perishable or unsuitable materials shall be placed in the clay liner or earth cap. Clay-rich soils will be used for the compacted clay liner. Soils with less clay content will be used for the cover soil.
2. **Waste Material.** The CAMU Phase 2 cell backfill materials shall consist of materials from source area excavations and demolition debris. Backfill materials shall be processed and screened to provide for two (2) gradations of materials. One gradation requires that 100% of the backfill material pass the 3/8" screen. The second gradation requires 100% of the material to be less than 2 feet in diameter. It is anticipated that debris and concrete from demolition will require size reduction to meet the required gradations

The backfill materials passing the 3/8" screen shall limit fines to 10% and shall act as a cushion course between the installed liner systems, including the larger graded backfill materials placed in the center of the cell. This material shall be placed adjacent to and to a minimum depth 12" perpendicular to the liner systems along the bottom and sides of the cell.

3. **Leachate Collection Trench Drain Materials.** The leachate collection trench drainage material shall consist of well graded sand and gravel that is subrounded to round, screened and washed free of vegetable matter, clays, and other deleterious substances

that could in time change the hydraulic conductivity of the drainage layer. The gradation of the drainage layer material shall lie within the range shown in Table 3.

4. **Topsoil and Subsoil.** The Contractor shall obtain topsoil and subsoil from soil salvage stockpiles, as described in section 203.07.7 (D)(1) and 203.07.7 (D)(2). Topsoil shall be free of trash, rocks, hard lumps of soil, and stubble. Subsoil shall be free of sharp or jagged rocks, roots, and debris.

**TABLE 3. LEACHATE COLLECTION
TRENCH DRAINAGE MATERIAL
(ASTM C33, SIZE 7, COARSE AGGREGATE)**

<u>Sieve Size</u>	<u>Percent Passing</u>
3/4"	100
1/2"	90 - 100
3/8"	40 - 70
#4	0 - 15
#8	0 - 5

B. Placement

1. **Compacted Clay Liner.** Compacted clay liner shall be shaped to the line, grade and cross-section and compacted as specified. This operation shall include placement of suitable clay material in lifts not to exceed 6 inches after compaction, disking and any moistening or aeration required to obtain proper compaction. Cobbles exceeding 2 inches in diameter and otherwise unsatisfactory material shall be removed and replaced with satisfactory material as directed by the Engineer.

Following compaction of any lift or portion of a lift, the fill shall be kept moist. If, in the opinion of the engineer, the prepared surface of any layer of earth fill is too dry or smooth to bond properly with the layer of material to be placed thereon, it shall be moistened and/or worked with harrow, scarifier, or other suitable equipment, in an approved manner to a sufficient depth to provide a satisfactory bonding surface before the next succeeding layer of earth fill material is placed.

If, in the opinion of the Engineer, the compacted surface of any layer of the earth fill in place is too wet for proper compaction of the layer of earth fill material to be placed thereon, it shall be removed; allowed to dry; or be worked with harrow, scarifier, or other suitable equipment to reduce the moisture content to the required amount; and then it shall be recompacted before the next succeeding layer of earth fill material is placed.

2. **Waste Material.** The contractor shall provide a temporary 20-mil RPE Liner for the waste material placed in the landfill cell. Special care must be taken to ensure that the waste is covered prior to significant occurrences of precipitation. In addition, the

Contractor shall ensure that the waste is placed in a manner that will ensure that the water which falls on the temporary liner will drain to a sump without coming in contact with the waste material and without significant ponding of the water on the temporary liner. The water reaching the sump shall immediately be discharged to the storm water retention pond shown on the Drawings. Therefore, the storm water retention pond shall be constructed prior to placing waste material into the landfill cell. Any storm water coming in contact with the waste material shall not be removed by the Contractor but shall be allowed to soak into the waste or removed to the Plant water treatment system.

3. **Leachate Collection Trench Drain Material.** The Contractor shall place the drain material in a single layer, taking care to protect the underlying flexible membrane layer.

C. **Compaction**

1. **Compacted Clay Liner.** Except for final preparation of the clay liner to receive the flexible membranes, compaction shall be accomplished by sheepsfoot rollers. The sheepsfoot roller shall have compaction feet of sufficient length to fully penetrate the lift thickness being placed. A smooth drum roller shall be used to provide a smooth top surface of the clay liner once it is ready to receive the flexible membrane liner. The bottom clay liner in the landfill cell shall be compacted to 95 percent of Proctor maximum dry density. Compact the top 6 inches of the subgrade to 90 percent Proctor maximum dry density.

- a. **Moisture Control.** The standard optimum moisture content is defined as, "That moisture content which will result in a maximum dry unit weight of the soil when subjected to the ASTM D-698-70, Method A., Proctor Compaction Test." the maximum dry weight, in pounds per cubic foot, obtained by the above procedure is the Proctor maximum dry density.

The moisture content of the clay liner material prior to and during compaction shall be distributed uniformly throughout each layer of the material. The allowable ranges of placement moisture content are based on design considerations. The moisture control shall be such that the moisture content of compacted earth fill, as determined by tests performed by the Engineer, shall be within the following limits:

Material represented by the samples tested having a placement moisture content more than 2 percent dry of the standard optimum condition, or more than 5 percent wet of the standard optimum condition will be rejected and shall be removed or reworked until the moisture content is between these limits.

Within the above limits, and based on a continuous record of tests made by the Engineer on previously placed and accepted material, the uniformity of placement moisture content shall be such that:

No more than 20 percent of the samples of accepted liner material will be drier than the standard optimum moisture content, and no more than 20 percent will be wetter than 3 percent wet of the standard optimum moisture content.

The average moisture content of all accepted embankment material shall be between 0 and 3 percent wet of the standard optimum moisture content.

The Engineer will inform the Contractor when the placement moisture content is near or exceeds the limits of uniformity specified above, and the Contractor shall immediately make adjustments in procedures as necessary to maintain the moisture content within the specified limits.

- b. **Density Control.** Density control of compacted earth fill shall be such that the dry density of the compacted material, as determined by tests performed by the Engineer shall conform to the following limits:

- 1) **Compacted Clay Liner.** Material represented by samples having a dry density less than 90 percent of its Proctor maximum dry density will be rejected. Such rejected material shall be rolled until a dry density equal to or greater than 95 percent of its Proctor maximum dry density is obtained.

Within the above limit and based on a continuous record of tests made by the Engineer on previously placed and accepted embankment, the uniformity of dry density shall such that:

No more than 20 percent of the material represented by the samples tested shall be at dry density less than 95 percent of Proctor maximum dry density.

The average dry density of all accepted embankment material shall be not less than 95 percent of the average Proctor maximum dry density.

2. **Leachate Collection Drain Layer.** The Contractor shall not compact the leachate collection drain layer but shall lightly roll the layer to ensure its stability under equipment traffic.
3. **Drain Layer.** The Contractor shall not compact the drain layer, but shall lightly roll the layer to ensure its stability under equipment traffic. Carefully roll the layer under the guidance of the Engineer to ensure that the underlying flexible membrane liner is not damaged.
4. **Gas Migration Layer.** The Contractor shall not compact the gas migration layer but shall lightly roll the layer to ensure its stability under equipment traffic.

5. **Subsoil.** The Contractor shall lightly roll the subsoil to ensure its stability under equipment traffic.
6. **Waste Materials.** The Contractor shall compact waste soils with a minimum of eight (8) passes (4 cycles) of a sheepsfoot or padfoot roller. Place the waste soils in a maximum lift thickness of 2 feet. The initial lifts or any lifts placed directly on or beneath a liner shall be no less than 1 foot in thickness and shall be composed of minus 3/8" crushed brick or concrete. This waste cover material shall be approved by the Engineer. No waste material containing sharp, jagged rocks, concrete, roots debris, or any other material, which may puncture the HDPE-FML will be used in this protective layer.

The Contractor may choose the equipment and manner with which to place the waste cover material on the liner. However, it must be satisfactorily demonstrated to the Engineer that both the equipment and manner used to place the chosen waste cover material over the liner will not have any detrimental effect on the liner.

D. Finish Grading

The surface of all excavation, fill, embankment and subgrade shall be finished to a reasonable smooth and compact surface in accordance with the lines, grades and cross-sections shown. The degree of finish for all graded areas shall be within 0.2 foot of the grades and elevations indicated. Gutters and ditches shall be finished in manner that will result in effective drainage.

END OF SECTION

DIVISION 600
MISCELLANEOUS CONSTRUCTION

SECTION 622 GEOSYNTHETICS CONSTRUCTION

622.01 MATERIALS

Replace with the following paragraph.

Furnish materials meeting the following requirements:

Geotextiles	Subsection 713.13
Geomembranes	Section 623
Geonet	Section 624

SECTION 623 FLEXIBLE MEMBRANE LINER (FML)

Add the following new section.

623.01 DESCRIPTION

A. Scope. The work covered by these Specifications consists of furnishing and installing high-density polyethylene (HDPE) and reinforced polyethylene (RPE) flexible membrane liners where shown on the Drawings.

B. Definitions used in this section.

1. **Air Lance**. Consists of a stream of air forced through a 3/32" air nozzle at the end of a hollow metal tube for conducting a commonly used nondestructive test method to determine seam continuity and tightness of relatively thin, flexible geomembrane.
2. **Bodied Chemical Fusion Agent**. A chemical fluid containing a portion of the parent geomembrane that, after application of pressure and after the passage of time, results in the chemical fusion of two essentially similar geomembrane sheets, leaving behind only that portion of the parent material.
3. **Geomembrane**. An essentially impermeable synthetic membrane used as a solid or liquid barrier. Synonymous term for flexible membrane liner (FML).
4. **Seaming Boards**. Smooth wooden boards, conveyor belt, or similar hard surface (preferably 1" X 12" X 8', or more), placed beneath the area to be seamed to provide a uniform surface to apply roller pressure in the fabrication of field seams.
5. **Tensiometer**. A device containing a set of opposing grips used to place a geomembrane seam in tension for evaluating its strength in shear or in peel.

6. **Vacuum Box Assembly.** Consists of a rigid housing, a transparent viewing window, a soft neoprene gasket attached to the bottom, port hole, or valve assembly, and a vacuum gauge for conducting a nondestructive test method which develops a vacuum in a localized region of a geomembrane seam in order to evaluate the seam's tightness and suitability.

623.02 QUALITY ASSURANCE

A. Fabricator/Installer Qualifications

1. The installer shall have worked in a similar capacity on at least five (5) projects similar in complexity to the project described in the Contract Documents and with each project involving at least 100,000 square feet of a similar product.
2. Installation supervisor/field engineer shall have worked in a similar capacity on at least two (2) jobs similar in size and complexity to the project described in the Contract Documents.
3. The manufacturer shall perform the quality control tests listed in Table 4 at the manufacturing plant. Provide all quality control certificate to the Engineer as specified in Section 623.03(B) of these Special Provisions.

TABLE 4. GEOMEMBRANE SPECIFICATIONS

PROPERTY	TEST METHOD	REQUIREMENT		
		DEMO CAP	CAMU CELL	CAMU CAP
Gauge (mils nominal)	ASTM D-1593	20	60	20
Tear Strength (pounds)	ASTM D 1004	70	45	70
Tensile Strength	ASTM D 638 Type IV	300	130	300
1. Yield Stress (lb/in)			240	
2. Break Stress (lb/in)			13	
3. Yield Elongation (%)			560	
4. Break Elongation (%)				
Puncture Resistance (lb)	ASTM D 4833	150	80	150
Stress Crack Resistance (Hours)	ASTM D 5397 Appendix	N/A	200	N/A

B. Delivery, Storage and Handling

1. Deliver geomembrane to the site only after the Engineer receives and approves the required submittals. Immediately remove damaged or unacceptable material from the site and replaced at no cost to the Owner.

2. Store geomembrane on pallets to protect from puncture, dirt, grease, water, moisture, mud, mechanical abrasions, direct heat of the sun or other damage. Stack geomembrane no more than 3 rolls or 1 pallet high.
3. Repair all geomembrane damaged during handling to the satisfaction of the Engineer. Immediately remove from the site and replace geomembrane determined by the Engineer to be irreparably damaged. Repair, removal and replacement shall be solely at the Contractor's expense.

C. Warranty

1. The geomembrane installer shall warrant his workmanship to be free of defects for one (1) year after final acceptance of the work. This warranty shall include, but not be limited to, all seams, anchor trenches, geomembrane attachments to appurtenances, and penetration seals. The installer shall also obtain and furnish the Owner a material warranty from the geomembrane manufacturer. The material warranty shall be for defects or failure due to weathering for ten (10) years after final acceptance.
2. Should a defect or failure occur within the aforesaid periods, the installer shall bear all costs for repair and/or replacement of the geomembrane and shall in addition bear all costs for the excavation of any cover backfill that is required to be removed in order to repair and/or replace the geomembrane. All materials removed to allow repairs to be made shall be reinstalled by the installer in accordance with these Contract Documents.

623.03 SUBMITTALS

A. Submit the following documents to the Engineer no later than three (3) weeks prior to installation of the geomembrane:

1. Complete written instructions for storage, handling, installation and seaming of the geomembrane which are in compliance with the Specifications and conditions of warranty.
2. Panel layout drawings showing both fabricated and field seams, and details not conforming with the Drawings (if any).
3. Qualification of the geomembrane installer, including the resume of the field engineer installation supervisor to be assigned to this project, including dates and duration of employment.
4. Installer's Quality Control Manual.

B. Submit the following documents to the Engineer prior to the shipment of the geomembrane to the site.

1. Polymer compound data

- a) Statement of production date or dates.
- b) Laboratory certification that the materials meet Specifications.
- c) Certification that all materials are from the same manufacturer.
- d) Copy of quality control certificates issued by manufacturer.
- e) Statement that no reclaimed polymer is added to the compound.

2. Geomembrane data.

- a) Statement of production date or dates
- b) Laboratory certification that the materials meet the Specification.
- c) Copy of quality control certificates issued by the manufacturer.
- d) Reports of tests defined in Table 4 from the manufacturer.

C. Submit the following to the Engineer prior to start of the FML installation:

- 1. Warranties for material and installation as specified hereinafter for review to the Owner.
- 2. Certificate of acceptance of prepared subgrade for each area to be covered by an HDPE FML, signed by the installation supervisor.

D. During installation, submit to the Engineer results of Contractor quality control testing as specified in 623.06 TESTING.

E. Upon completion of the installation, submit to the Engineer the following:

- 1. Certificate stating the geomembrane has been installed in accordance with the Contract Documents.
- 2. Manufacturer's and Installer's warranties as specified hereinafter.
- 3. Record drawings showing location of panels, seams, repairs, patches, and destructive samples, including detailed measurements.

623.04 MATERIALS

A. Description of Materials

- 1. Geomembrane liner shall be top quality products, recommended by the manufacturer for this specific type of work, and shall have been satisfactorily demonstrated by prior use to be suitable and durable for such purposes.
- 2. Extrudate Rod or Bead shall be made from the same resin as the geomembrane liner with carbon black. Additives shall be thoroughly dispersed in the extrudate.

B. Physical Characteristics

The HDPE geomembrane liner:

1. Shall be formulated from a high density polyethylene resin with a specific gravity greater than or equal to 0.94. All resins shall be of the same type and no batch shall be blended with recycles or seconds.
2. Shall be uniform in color, thickness, size and surface texture. The material shall be a flexible, durable, watertight product free of pinholes, blisters, holes, bubbles, gels, undispersed resins or carbon black, and other contaminants. Processing aides, antioxidants and other additives shall not exceed a combined maximum total of 1 percent by weight, ignoring carbon black, and 3.5 percent by weight including carbon black.
3. Shall have the minimum physical property characteristics, as outlined in Table 4. Certified test results showing that the sheeting meets or exceeds the Specification shall be submitted per Section 623.03.
4. Shall be supplied in rolls labeled with thickness, length, width, manufacturer, plant location, and identification number.

The RPE geomembrane shall be OR RPE 25 as supplied by Layfield Plastics or an approved equal. The geomembrane shall conform to the manufacturer's material properties table. All values are Typical Values unless otherwise noted.

623.05 INSTALLATION

A. Subgrade Preparation

The subgrade to be lined:

1. Shall be maintained in a dry enough condition for equipment to operate without rutting.
2. Shall be smooth and free of projections and sharp objects that can damage the lining. Remove rocks, hard clods, and other such material, and roll the subgrade so as to provide a smooth compact surface. The smoothed subgrade will limit liner bridging to less than 1 inch.
3. Shall be inspected prior to geomembrane installation to ascertain its suitability for installation in compliance with the terms of the product warranty and the requirements of this Specification. For HDPE geomembranes, submit to the Engineer a signed certification that the prepared subgrade surface is satisfactory. Installation of

geomembrane without providing written certification shall constitute acceptance of the subgrade by the Contractor.

4. Shall have round edges at anchor trenches or edges shall be cushioned with geotextile and backfill.

B. Geomembrane Installation

1. Only layout the amount of geomembrane that can be seamed during that same day. Assign each panel a simple and logical identifying code number or letter. For HDPE geomembrane, identify the panels with each appropriate code on the layout design referenced in 623.03 A.2.
 2. Do not damage geomembrane by handling, traffic, or leakage of hydrocarbons or any other means. Do not wear damaging shoes or engage in activities that could damage the geomembrane. Open or unroll geomembrane panels using methods that will not damage, stretch or crimp the geomembrane. Prevent excess condensation on the geomembrane such that the underlying surface is not adversely impacted. Protect underlying surface from damage. Provide sufficient material to allow for geomembrane shrinkage and contraction. Use methods that minimize wrinkles between adjacent panels. Place ballast on geomembrane to prevent uplift from wind. Use ballast that will not damage geomembrane. Do not allow vehicle traffic directly on geomembrane. Remove folded or wrinkled material that exceeds 6 inches in width. Visually inspect geomembrane for imperfections. Mark faulty or suspect areas for testing and/or repair. Any portion of the lining damaged during installation shall be removed or repaired by using an additional piece of the same membrane as specified herein. The liner shall be installed in a relaxed condition and shall be free of stress or tension upon completion of the installation. Stretching the liner to fit is not permissible. Backfill anchor trenches as soon as possible after installation of liner and geonet, if applicable.
 3. Place and seam geomembrane only when ambient temperatures, measured six inches above the geomembrane, are between 40 degrees F and 100 degrees F, unless otherwise specified or approved. Installation below 40 degrees F shall occur only after verifying that the geomembrane can be seamed according to Specifications and approval by the Engineer. Do not install geomembrane during precipitation, in the presence of excessive moisture, in areas of ponded water, or in the presence of excessive winds. Protect the geomembrane from wind uplift during installation through the use of sand bags or other suitable weights.
 4. Repair all damaged geomembrane and test damaged areas prior to backfilling.
- C. Pipe Boots. Fit and seal pipes, manholes, and other penetrations of the geomembrane with shop fabricated boots as shown on the Drawings. Match the flange portion of the boot to the angle of the slope or bottom where the pipe or manhole enters the liner for a smooth fit without excess stretching of the material.

D. Seaming

1. Seam Layout shall:

- a) Orient seams parallel to line of maximum slope, i.e., orient down, not across, slope.
- b) Keep butt seams at least ten (10) feet horizontally away from toe of slope.
- c) For HDPE geomembrane, use seam numbering system compatible with panel numbering system.

2. Trial field seaming shall be accomplished by the Contractor on-site for HDPE FMLs.

- a) Conduct trial seams on pieces of geomembrane to verify adequate seaming methods and conditions.
- b) Conduct trial seams:
 - 1) At beginning of each seaming period;
 - 2) At least once for each four seaming hours;
 - 3) For each seaming apparatus in use;
 - 4) At least once per shift for each person performing seaming; and
 - 5) Whenever changes in climatic conditions could effect seam quality.
- c) Make test seam in the location of seaming and in contact with subgrade or geosynthetic (same condition as the geomembrane to be seamed).
- d) Make test seam sample at least two (2) feet long and eleven (11) inches wide with the seam centered lengthwise.
- e) Cut two, 1-inch wide test strips from opposite ends of the trial seams.
- f) Cut specimens constant 1-inch wide and clamp at 90 degree angle in tensiometer.
- g) Quantitatively test field specimens for peel adhesion (ASTM D3083) first, and bonded seam strength (ASTM 3083) second. Insure that these tests are performed in this order.
- h) A trial seam sample passes when the following results are achieved for both tests.
 - 1) The break is film tearing bond (FTB);
 - 2) The break is ductile; and
 - 3) The strength of break is at least 80% of the specified sheet strength.
- i) Repeat the trial seam in its entirety if one (1) of the trial seam samples fails in either peel or shear mode.

- j) Notify Engineer when repeated trial seam fails and do not continue seaming until deficiencies or adverse conditions are determined and corrected, and two (2) consecutive successful trial seams are achieved.
3. Use the following seaming procedure for HDPE geomembranes.
- a) Do not begin seaming on liner until all trial seam test samples made by the equipment to be used passes tests as defined above.
 - b) Form seams per manufacturers written instructions. Wipe the contact surfaces of the panels clean to remove all dirt, dust or other substance. Use solvent for cleaning contact surfaces of field joints and for other required uses as recommended by the manufacturer. Apply a hot wedge or hot knife seaming tool to the overlapped panel edges creating a continuous thermal bond between the panels. Smooth out any wrinkles. Field seams shall have a strength of at least 80% of the specified sheet strength.
 - c) Extend seaming to the outside edge of panels to be placed under the anchor berm and in the anchor trench.
 - d) If there is not firm substrate, use a seaming board directly under the seam overlap to achieve proper support.
 - e) If seaming operations are carried out at night, provide adequate illumination.
 - f) Cut fish mouths or wrinkles at the seam overlaps along the ridge of the wrinkle in order to achieve a flat overlap. Seam the cut fish mouths or wrinkles and patch any portion where the overlap is less than three (3) inches with an oval or round patch of the same geomembrane extending a minimum of six (6) inches beyond the cut in all directions.
 - g) Seam only when ambient temperature, measured 6 inches above the geomembrane is between 40 degrees F and 100 degrees F unless other limits are accepted, in writing, by the Engineer.
4. Use a stitched "Z" fold for RPE geomembranes.

E. Defects and Repairs

1. Inspection

- a) During installation and seaming, visually examine all seams and non-seam areas of the geomembrane for defects, holes, blisters, undispersed raw materials and any sign of contamination by foreign matter. The surface of the geomembrane shall be clean at the time of the examination. Mark areas suspected of

deficiencies. Remove areas of geomembrane requiring more than one patch per 5,000 square feet and replace at no additional cost to the Owner.

- b) Repair each suspect location both in seam and non-seam areas shall be repaired and non-destructively tested. Do not proceed with work which will cover locations which have been repaired until passing test results are achieved.

2. Repair Procedures

- a) Repair all portions of the geomembrane exhibiting a flaw, or failing a destructive or non-destructive test. Provide a written recommendation for method of repair to the Engineer prior to initiating repair and obtain approval of the repair procedure from the Engineer prior to making repair. Methods which are acceptable to the Engineer and their application are as follows:

- 1) Capping. Cap for repair of large lengths of failed seams.
- 2) Patching. Patch large (over 3/8 inch diameter) holes, tears (over 2 inches long), undispersed raw material, and contamination by foreign matter.
- 3) Remove and Replace. Remove the unsatisfactory material and replace with new material seamed into place.

- b) In addition

- 1) Abrade surfaces of the geomembrane which need repaired no more than one-half (1/2) hour prior to the repair.
- 2) Clean and dry all surfaces at the time of repair.
- 3) Extend patches or caps at least six (6) inches beyond the edge of the defect and all corners of patches shall be rounded with a radius of at least three (3) inches.
- 4) Cut the geomembrane below large caps to avoid water or gas collection between the sheets.

- c) Nondestructively test each repair using the methods described in Section 623.06 of these Special Provisions. Repairs which pass the non-destructive test shall be considered an adequate repair. Large caps shall be of sufficient length to require destructive test sampling, at the discretion of the Engineer. Redo repairs that have failed tests and retest until a passing test results.

623.06 TESTING

A. General

- 1. Quality control testing, including laboratory testing, field seam testing, and destructive testing shall be performed by the Contractor and observed at the discretion by the Engineer.

2. HDPE field seams shall be non-destructively tested over their full length by pressurizing the seam for dual-hot-wedge method seams in the HDPE geomembranes, or using a vacuum test unit, air lance, or other approved method for seams in RPE geomembranes or in HDPE geomembranes where the dual-hot-wedge method could not be used. Non-destructive testing shall be carried out as the seaming progresses, not at the completion of all the field seaming.

B. Vacuum Testing

1. The equipment shall consist of the following:
 - a) A vacuum box assembly.
 - b) A steel vacuum tank and pump assembly equipped with a pressure control and pipe connections.
 - c) A rubber pressure/vacuum hose with fittings and connections.
 - d) A soapy solution and applicator.
2. The following procedures shall be followed:
 - a) Energize the vacuum pump and reduce the tank pressure to approximately ten (10) inches of water.
 - b) Place the box over the wetted seam area (soapy solution).
 - c) Ensure that a leak-tight seal is created.
 - d) For a period of not less than fifteen (15) seconds, examine the geomembrane through the viewing window for the presence of soap bubbles.
 - e) All areas where soap bubbles appear shall be marked and repaired in accordance with repair procedures described in Section 623.05E.
 - f) Conduct vacuum testing per ASTM 4437.

C. Air Lance Testing

1. Equipment shall consist of an air lance that can provide a minimum air pressure of 30 psi and a maximum air pressure of 40 psi.
2. The following procedures shall be followed:
 - a) The air nozzle shall be held at a 45 degree angle to the field seam approximately 2" off the edge of the material.

- b) The air shall be directed toward the seam edge, upper edge and surface to detect loose edges.
- c) Riffles indicating unbonded areas within the seam or other undesirable seam conditions shall be patched in accordance with repair procedures described in Section 623.05 (E). The patch should then be tested using the same air lance test method.
- d) Conduct air lance testing per ASTM 4437.

D. Destructive Testing of Seams in HDPE FMLs

1. The Engineer will direct the Contractor to perform destructive seam tests at selected locations. The purpose of these tests is to evaluate seam strength. Perform seam strength testing as the seaming work progresses, not at the completion of all field seaming.
2. Location and Frequency
 - a) Collect destructive test samples shall be collected at a minimum frequency of one (1) test location per five hundred (500) feet of seam length, unless otherwise directed by the Engineer.
 - b) Samples, in addition to the minimum frequency, shall be taken as required by the Engineer.
 - c) Test location shall be determined during seaming and may be prompted by suspicion of insufficient adhesive, contamination, offsets, or any other potential cause of imperfect seaming. The Engineer will select the locations. The Engineer will not notify the Installer in advance of selecting locations where seam samples will be taken.
 - d) The Engineer reserves the right to increase the frequency in accordance with the actual performance results of samples taken.
3. Sampling Procedure
 - a) Samples shall be cut at locations designated by the Engineer as the seaming progresses in order to obtain laboratory test results before the geomembrane is covered by another material. Each sample shall be numbered and the sample number and location identified on the panel layout drawing.
 - b) All holes in the geomembrane resulting from destructive sampling shall be immediately repaired in accordance with repair procedures specified in Section 623.05 (E).

4. Size of Samples. The samples shall be eleven (11) inches wide by twenty-four (24) inches long with the seam centered lengthwise. Two (2) 1-inch wide strips shall be cut from each end of the sample and these shall be tested (shear and peel) in the field by the installer. The remaining sample shall be cut into two (2) parts and distributed as follows:
 - a) One (1) portion for the Contractor, eleven (11) inches by eleven (11) inches.
 - b) One (1) portion to the Engineer or archive storage, eleven (11) inches by eleven (11) inches
 5. Field Testing. The two (2), one (1) inch wide strips described in Section 623.06 (D)(4) shall be tested in the field by the installer and witnessed by the Engineer, by tensiometer, for peel and shear, respectively. Test strips shall meet the peel and shear values specified for trial seams in Section 623.05 (D)(2). If any field test sample fails to pass, then the procedures outlined in that Section shall be applied.
 6. Procedures for Destructive Test Failure. The following procedures shall apply whenever a sample fails the destructive test, whether performed by field or laboratory testing:
 - a) The seam shall be reconstructed between any two (2) passed test locations, or
 - b) The seaming path can be traced to an intermediate location (at least ten (10) feet minimum from the location of the failed test in each direction) and a small sample taken for an additional field test at each location. If these additional samples pass the field tests, then full laboratory samples shall be taken. If these laboratory samples pass, then the seam shall be reconstructed between these locations. If either sample fails, then the process shall be repeated to establish the zone in which the seam should be reconstructed.
 7. Acceptance of Seams - All acceptable seams must be bounded by two (2) locations from which samples passing laboratory destructive tests have been taken. In cases exceeding one hundred and fifty (150) feet of reconstructed seam, a sample taken from within the reconstruction zone must pass destructive testing. Whenever a sample fails, additional testing may be required for seams that were seamed by the same personnel and/or apparatus or seamed during the same time shift.
- E. Geomembrane Wrinkle. When seaming of a geomembrane liner is completed, or when seaming of a large area of a geomembrane liner is completed, and prior to placing overlying materials, the Engineer shall identify the location of excessive geomembrane wrinkles. Wrinkles so identified shall be cut, re-seamed and tested.

F. Seams That Cannot Be Non-Destructively Tested. The following procedures shall apply to locations where seams cannot be non-destructively tested:

1. All such seams shall be cap-stripped with the same geomembrane.
2. If the seam is accessible to testing equipment prior to final installation, the seam shall be non-destructively tested prior to final installation.

G. Engineering Observation. If the seam cannot be tested prior to final installation, the seaming and cap-stripping operations shall be observed by the Engineer and Contractor for uniformity and completeness.

H. Geomembrane Acceptance. The Contractor shall retain ownership and responsibility for the geomembrane until acceptance by the Owner. The geomembrane shall be accepted by the Owner when:

1. Conformance test results meet the requirements of the Contract Documents.
2. Required documentation including warranty from the manufacturer, fabricator and installer has been received and accepted.
3. The installation is complete and accepted by the Engineer.
4. Verification of the adequacy of all field seams and repairs, including associated testing, is complete.
5. Written certification documents, including as-built drawings, have been received by the Engineer.

623.07 ANCHORAGE

Anchor CAMU liners using edge trenches as shown on the drawings. Anchor RPE for cleaning and demolition caps using treated 2 x 4 lumber or metal straps as shown on the drawings.

SECTION 624 - GEONET

Add the following new section:

624.01 DESCRIPTION

The work covered by these Specifications consists of furnishing and installing polyethylene (PE), medium density polyethylene (MDPE), or high density polyethylene (HDPE) geonet where shown on the Drawings or directed by the Engineer.

624.02 MATERIALS

The geonet drainage material shall contain stabilizers to prevent ultraviolet light degradation.

A. Description of Materials

1. Geonet shall be first quality products and manufactured specifically for the purposes of this work, and shall have been satisfactorily demonstrated by prior use to be suitable and durable for such purposes.

B. Physical Characteristics

1. Geonet shall be formulated from 100% virgin polyethylene resin. The use of water soluble formulation ingredients is prohibited.
2. Geonet shall be uniform in color, thickness, size and surface texture. The material shall be a flexible, durable product free of tears and contaminants.
3. Geomembrane shall have the minimum physical property characteristics, as outlined in Table 5. Certified test results showing that the sheeting meets or exceeds the Specification shall be submitted per Section 624.03 (E).

TABLE 5. GEONET SPECIFICATIONS

PROPERTY	TEST METHOD	MINIMUM REQUIREMENT
Thickness (mils nominal)	ASTM D-751	250.0
Compressive Strength (pounds/inch ²)	ASTM D 1621	100.0
Transmissivity @ 4000 psf (gal./min./ft.)	ASTM D 4716	2.4

624.03 INSTALLATION**A. Surface Preparation**

1. Prior to deployment of the geonet, the Contractor shall inspect the underlying geomembrane surface to ascertain its suitability for installation in compliance with the terms of the product warranty and the requirements of this Specification.
2. Round edges of anchor trenches as recommended by the geonet manufacturer or cushion with geotextiles and backfill.

B. Geonet Installation

1. Only install enough panels that can be secured during that same day.

2. Do not damage geonet by handling, traffic, or leakage of hydrocarbons or any other means. Do not wear damaging shoes or engage in activities that could damage the geomembrane. Open or unroll geonet panels using methods that will not damage, stretch or crimp the geonet. Use methods that minimize wrinkles between adjacent panels. Place ballast on geonet to prevent uplift from wind. Use ballast that will not damage geonet. Repair damage to underlying materials prior to completing deployment of geonet. Do not allow vehicle traffic directly on geonet. Remove folded material. Visually inspect geonet for imperfections. Mark faulty or suspect areas for repair. Any portion of the geonet damaged during installation shall be removed or repaired by using an additional piece of the same geonet as specified herein. The geonet shall be installed in a relaxed condition and shall be free of stress or tension upon completion of the installation. Stretching the geonet to fit is not permissible. Backfill anchor trenches.

C. Securing Geonet

1. Seam Layout shall meet the following requirements:
 - a) Orient seams parallel to line of maximum slope, i.e., orient down, not across, slope.
2. The seaming procedure used shall be as follows:
 - a) Field connections will be made to secure factory fabricated panels or rolls of geonet together in the field. Connections shall be formed by lapping the edges of panels a minimum of 2 inches. Any wrinkles shall be smoothed out.
 - b) Secure overlapped edges of the geonet by plastic ties approximately every five (5) feet along the panel length. Use plastic ties that are white or a bright color for easy inspection. Do not use metallic ties.
 - c) Extend connections to the outside edge of panels to be placed under the anchor berm and in the anchor trench.
 - d) If securing operations are carried out at night, provide adequate illumination.

D. Defects and Repairs

1. Inspection
 - a) During installation and securing, examine all areas of the geonet for defects, tears, undispersed raw materials and all sign of contamination by foreign matter. The surface of the geonet shall be clean at the time of the examination. Mark all areas suspected of deficiencies.
 - b) Repair each suspect location.

2. Repair Procedures

- a) Repair all portions of the geonet exhibiting a flaw by removing the unsatisfactory material and replacing with new material that is overlapped and secured in place.

E. Geonet Acceptance. The Contractor shall retain ownership and responsibility for the geonet until acceptance by the Owner. The geonet shall be accepted by the Owner when:

1. Conformance test results meet the requirements of the Contract Documents.
2. Required documentation including warranty from the manufacturer, fabricator and installer has been received and accepted.
3. The installation is complete and accepted by the Engineer.
4. Written certification documents, including as-built drawings, have been received by the Engineer.
5. Submittals shall be the same as those required for geomembrane in Section 623.

626.00 INSTALLATION SPECIFICATION —RPE® GEOMEMBRANE

Add the following new section:

626.01 SCOPE

- A. The work covered by this specification consists of the supply (and installation) of an RPE geomembrane at the locations shown on the drawings (as directed by the Engineer).
- B. The supply (and installation) of this liner shall be in accordance with the following references:
 1. ASTM D751-89, Standard Test Methods for Coated Fabrics.
 2. ASTM D3020-89, Standard Specification for Polyethylene and Ethylene Copolymer Plastic Sheeting for Pond, Canal, an Reservoir Lining.
 3. ASTM D4545-86(91), Standard Practice for Determining the Integrity of Factory Seams Used in Joining Manufactured Flexible Sheet Geomembranes.

626.02 MATERIAL CHARACTERISTICS

- A. The sheeting shall be suitably formulated from first quality polyethylene materials. The geomembrane shall consist of a high strength, oriented-tape HDPE scrim coated on both sides with an impervious HDPE coating for OR RPE 25. RPE materials prepared for

temporary covers or other exposed application will have UV stabilizers added to the impervious coating and UV stabilizers added to the scrim tapes. The RPE material shall be pigmented to produce a uniform color such as black, blue, or silver.

- B. The sheeting shall be capable of being sealed to itself using a stitched "Z" fold or heat-sealing technique.
- C. The sheeting shall be supplied in the widest widths possible to minimize fabrication seaming. Roll widths shall be not less than 3.5 m.

626.02.01 Manufacturer's Statement

Upon request, the manufacturer of the RPE sheeting shall submit a certification that the material meets the manufacturer's specifications. Material index quality control tests shall be performed a minimum of every 18,000 kg (40,000 lbs), once per shift, or at the start of a new material run.

626.02.02 Material Properties

The geomembrane shall be OR RPE 25 as supplied by Layfield Plastics or an approved equal. The geomembrane shall conform to the manufacturer's material properties table. All values are Typical Values unless otherwise noted.

626.02.03 Warranty

- A. Contractor shall provide Owner with a warranty guaranteeing a minimum of three year satisfactory liner performance from defects and UV-degradation.

626.03 FABRICATION

- A. On all projects larger than 20,000 m² (200,000 ft²), submit a panel layout in accordance with the project submittal requirements. On the panel layout, indicate the proposed arrangement of panels, fabricated seam orientation, field seam location, and anchor trench locations.
- B. Individual roll widths of RPE shall be fabricated into large panels to minimize field seaming. All fabrication welds shall be a minimum of 25 mm (1 inch) wide. Heat welding techniques shall be used for shop fabrication such that all shop welds will provide a delamination of the coating from the scrim when tested. Peel testing will meet the requirements for a "Film Tear Bond" (FTB) Peel Adhesion. The minimum FTB rating shall be AD-DEL.
- C. Fabrication welding shall be tested for Bonded Seam strength at a rate of three samples for every 915 lineal meters (3,000 ft) of welded seam. At the fabricator's option, one sample may be taken from each 300 lineal meters (1,000 ft) of welded seam or every 5 shop seams (whichever is greater). Seam samples will be tested for shear strength.

Fabricated seam strengths shall conform to the shop seam strength values. Seams samples shall also be qualitatively tested for peel adhesion with a Film Tear Bond rating being obtained on all seams. Seams that do not meet the strength or FTB criteria are to be repaired and retested.

- D. Fabricated panels shall be accordion folded in one direction and neatly rolled in the other. Each panel shall be protected with an opaque, weather resistant covering and marked with panel dimensions and unfolding directions. All panels shall be delivered and stored in a protected area until ready for installation.

626.03.01 Installation

- A. Prepared surfaces shall be smooth and free of sharp objects, rocks, and organics (roots). A 10 ounce geotextile shall be placed under the liner in all areas.
- B. Installation shall be performed in a logical sequence by an installer/contractor experienced in lining installations.
- C. Place panels according to the drawings and the panel layout. Sufficient thermal slack shall be incorporated during placement to ensure that harmful stresses do not occur in service. Distribute slack wrinkles evenly.
- D. All field seams shall be tightly bonded using tape seaming technology. Six inch wide polyisobutylene-butyl sealant tape shall be used at penetrations and for all field seams.
- E. Full contact between the tape and the material will be the standard of acceptance.
- F. All field seams shall be non-destructively tested along their entire length using the Air Lance Test (ASTM D4545) or the Mechanical Point Stress Test (ASTM D4545). Patches and seams around pipe penetrations and fitments shall be tested using the Point Stress Test (ASTM D4545). All discontinuities detected by any test method shall be repaired.
- G. Repairs shall utilize the same material as the geomembrane, or a material compatible with the geomembrane, and shall extend a minimum of 300 mm (12 inches) beyond the defect. Repairs shall be accomplished with tape seaming techniques utilizing a tape appropriate to existing site conditions. All repairs are to be tested using Air Lance or Mechanical Point Stress methods as applicable (ASTM D4545).
- H. Protect the geomembrane from wind uplift during installation through the use of sand bags or other suitable weights. Backfill anchor trenches and place design backfill on geomembrane as soon as practical. Placement of backfill should be monitored continuously, and any damaged areas repaired and tested.
- I. Shingle RPE seams in the direction of water flow as applicable. If possible, backfill in the direction of flow to prevent application of stresses to field seams.

- J. **Pipe Boots.** Fit and seal pipes, manholes, and other penetrations of the geomembrane with shop fabricated boots as shown on the Drawings. Match the flange portion of the boot to the angle of the slope or bottom where the pipe or manhole enters the liner for a smooth fit without excess stretching of the material.

627.00 SOIL AMENDMENTS, SEEDBED PREPARATION, AND SEED MIX

Add the following new section.

627.01.1 Soil Amendments, Seedbed Preparation, And Seed Mix

- A. **Topsoiling.** Topsoil shall cover all embankment, backfill, site grading and exposed cut slope areas in accordance with Standard Specification 610. Application rates shall be a minimum of 4 inches at all sites unless otherwise designated in the specifications or on the Drawings.
- B. **Seedbed Preparation.** After the project site has been graded to final plan specifications the site to be seeded shall be cultivated to provide a uniform seedbed surface. The seedbed shall be cultivated sufficiently to reduce the soil to a state of good tilth when the soil particles on the surface are small enough to lie closely enough together to prevent the seed from being covered too deeply for optimum germination. Prior to executing the seeding, fertilizing, and mulching work items, the seedbed at all sites shall be prepared and conditioned so these items can most efficiently be completed in conformance with Standard Specification 610. The seeding, fertilizing, and mulching work items shall be executed only after the seedbed has been accepted by the Engineer.
- C. **Seeding and Fertilizing.** All areas at the sites disturbed in the execution of the work shall be seeded and fertilized. These areas include that acreage disturbed under the designated work items.

Other areas which are disturbed by the Contractor's operation, will also require seeding and fertilizing. Any such disturbed areas will be considered as site damage and will not be measured or considered for payment. The cost of this work shall be absorbed solely by the Contractor.

All disturbed areas shall be seeded with the designated Grass Mix. Two mixes are provided. One mix is for use on land designated for return to agricultural use and the other applies to all other disturbed areas.

The Contractor shall accomplish this work in accordance with the Fertilizing and Seeding Subsection and the Mulching Subsection of Standard Specification 610, and also in accordance with the provisions contained herein.

1. **Fertilizer.** Fertilizer shall be applied at the rates specified below. Exceptions will be made for seed drills that are capable of incorporating the fertilizer and seed directly into the seedbed uniformly at the specified rates. Fertilizer shall be applied to the prepared seedbed prior to seeding or mulching and shall be blended

with the topsoil as called for in Standard Specification 610, or concurrently with the seed (as "no till" drills allow).

Fertilizer shall be applied to the prepared seedbed prior to seeding. The fertilizer shall be incorporated into the soil by discing, raking, or shallow plowing to the full depth of the topsoil or to a maximum depth of 6 inches, whichever is less. Fertilizer shall be incorporated with equipment operated at right angles to the slope of the land.

All areas, except areas that will be returned to agricultural production within one year of project completion, shall be fertilized with a balanced inorganic chemical fertilizer with the following nutrients:

Composition 26-10-5	150 lbs/acre
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All required fertilizer certificates shall be provided to the Engineer a minimum of three days prior to fertilizing. The certification shall include the guaranteed analysis of the fertilizer(s) stated in terms of the percentages of nitrogen (N), available phosphorus (P205) and potash (K20) in that order. The fertilizer specification may be changed by the Owner to a fertilizer mix based on specific site soil samples at no cost to the Owner.

2. Seed Certification. Seed certifications as required by Standard Specification 610 shall be submitted to the Engineer prior to any seeding. The Contractor shall also submit a copy of the bill or other documentation from the seed supplier showing actual bulk weights of the individual seed types combined in the mix. The required certifications and documentation shall be provided to the Engineer at least three days prior to seeding.
3. Seeding. The following application rates for seed are based on the drill seeding method. The seed mixture shall be uniformly distributed over the areas shown on project plans. All planting shall be done between October 15 and May 20 of a given year, except as specified in writing by the Owner. Seed shall be drilled at a depth of 1/2 inch utilizing a pasture or rangeland type drill (including custom seeders, furrow drills, disc drills or no-till drills) with a roller/cultipacker integral to the seed drill equipment. Broadcast seeding method will not be utilized on this project. Hydraulic seeding will be allowed only on areas too steep for drill seeding. Where the hydraulic seeding method is used, the application rates listed below must be doubled at no additional cost to the Owner.
4. Tracking. Tracking will be required only on areas where mulch tilling cannot be accomplished.

DISTURBED AREAS DESIGNATED FOR RETURN TO AGRICULTURAL PRODUCTION

Common Name	Scientific Name	Variety	Seed Application Rate (PLS lbs/acre)
Regreen	Triticum x Elytrigia	---	30
Total seeded species (PLS lbs/acre)¹			30

¹ PLS (Pure Live Seed) seeding rate is based on drill seed application.
PLS seeding rate will be doubled for broadcast or hydroseeded applications.

DISTURBED AREAS NOT DESIGNATED FOR RETURN TO AGRICULTURAL PRODUCTION

Common Name	Scientific Name	Variety	Seed Application Rate (PLS lbs/acre)
Streambank wheatgrass	Agropyron riparium	Sodar	2
Pubescent wheatgrass	Agropyron dasystachyum	Critana	2
Western wheatgrass	Agropyron smithii	Rosana	3
Bluebunch wheatgrass	Agropyron spicatum	Secar	3
Crested wheatgrass	Agropyron cristatum	Ephraim	2
Sideoats grama	Bouteloua curtipendula	Pierre	3
Regreen	Triticum x Elytrigia	---	10
Cicer milkvetch	Astragalus cicer	---	5
Total seeded species (PLS lbs/acre)¹			30

¹ PLS (Pure Live Seed) seeding rate is based on drill seed application.
PLS seeding rate will be doubled for broadcast or hydroseeded applications.

D. Tackifier. Tackifier shall be applied with all hydromulched areas at the manufacturer's recommended rate of forty (40) pounds per acre for slopes flatter than 2:1 and eighty (80) pounds per acre for slopes 2:1 or steeper.

1. Summer Erosion Control Procedure. In the event the construction is completed after April 30 but before October 15, the disturbed areas shall then be either mulched immediately with a vegetative mulch of straw or hay, applied at a rate of 4,000 pounds per acre or a soil stabilizer applied at the manufacturer's recommendation with a hydroseeder. The mulch shall be anchored into the seedbed as specified in Standard Specification 610.

A "no-till" drill with "no-till" coulters may be used to seed and fertilize directly into the mulched areas requiring permanent seeding after the October 15 date. After October 15, fertilizer shall be applied to the work areas at the application rate noted and incorporated into the soil as specified in Standard Specification 610. Seed shall then be applied by drilling methods only.

END OF DOCUMENT

DIVISION 700 - MATERIALS

SECTION 708 - CONCRETE, PLASTIC, AND FIBER PIPE

(Add the following new subsection.)

708.08 POLYETHYLENE SMOOTH WALL PIPE

Furnish smooth wall polyethylene pipe meeting ASTM F714, DR 21 for pipes 75 to 600 mm (3 to 24 inches), and SDR 26 for pipes 650 to 1200 mm (26 to 48 inches). Pipe shall be produced from PE certified by the resin producer as meeting the requirements of ASTM D3350, minimum cell class 335434C.

SECTION 716 - FLOWABLE FILL

(Add the following subsection.)

716.01 GENERAL

This section covers furnishing and placing of flowable fill. Flowable fill shall be placed in utilities as specified on drawings.

716.02 MATERIALS

Control Density Fill - (CDF) is used as a low strength, self consolidating fill material for confined spaces which can be easily excavatable at a later time. CDF is characterized by a high maximum slump of 8 inches. CDF is not a structural concrete and should not be used in such applications. CDF may be used as a trench backfill, structural backfill, pipe bedding, or pipe filling for abandonment in place. CDF shall consist of Portland cement, aggregates, water and fly ash. Chemical admixtures and other mineral admixtures may be used. The actual mix proportions and flow characteristics shall be determined by the producer of the CDF to meet site conditions. Mix designs and performance tests shall be submitted to the Engineer for approval.

Portland Cement

Portland cement shall conform to the requirements of ASTM C150, Type I or Type II.

Aggregates

The aggregates shall conform to the requirements of ASTM C33. The amount of material passing the #200 sieve shall not exceed 15 percent. Also, liquid limit and plasticity index shall not exceed 25 and 5, respectively.

Chemical Admixtures

Chemical admixtures shall conform to the requirements of ASTM C494.

Water

Water shall be free of oils, acids, alkalies, organic matter or other deleterious substances.

Fly Ash

Fly ash shall conform to the requirements of ASTM C618, Class C or F.

The contractor will perform occasional quality assurance tests on the flowable fill consisting of casting three cylinders for comprehensive strength testing. The required minimum compressive strength value at 28 day age is 200 psi. Compressive strength test specimens are to be cast according to ASTM C31, and tested according to ASTM C39.

The Contractor will provide the Contracting officer with a mix design from a testing laboratory generally conforming to the requirements of ASTM E329 within 15 days after Notice to Proceed. Mix design strengths at 7 and 14 days shall also be reported within 3 days after the test is taken.

716.03 EXECUTION

General Requirements

Plug and abandonment of the site underground utilities will occur as site cleaning and demolition activities are completed but before grading and capping activities begin.

Comply with ASTM C94 for Measuring, Mixing, Transporting, and Placing the Flowable Fill, and as herein specified.

Mix and place Flowable Fill only when the air temperature is at least 35 degrees F and rising. At the time of placement, Flowable Fill shall be at least 40 degrees F. Stop mixing and placement when the air temperature is 40 degrees and falling.

Flowable Fill shall be placed by methods that preserve the quality of the material in terms of compressive strength, flow, homogeneity, plasticity and workability. The material shall be transported, placed, and/or consolidated so that it flows easily through all utility corridors and pipes. It shall have the flow, consistency, and workability such that the material is self-compacting.

Protect freshly placed Flowable Fill from premature drying, excessive cold, or hot temperatures. The air in contact with the backfill surface shall be maintained at temperatures above freezing.

Plug and Abandonment Prior to Backfill, Grading, and Capping

All underground utilities underlying temporary capping areas will be plugged and abandoned prior to backfill, grading, and capping activities.

Pipe Segments – Designated pipe segments, which include manholes and small vaults, shall be plugged with Flowable Fill. Plugging shall begin at the down gradient location, such as a manhole or small vault, and proceed upgradient to ensure effective filling of the conduit.

END OF DOCUMENT

SECTION VIII

SECTION VIII

DRAWINGS

(Enclosed as a separate bound document.)

SECTION IX

SECTION IX

SITE ENVIRONMENTAL HEALTH & SAFETY PLAN

AND

ENVIRONMENTAL REQUIREMENTS FOR CONTRACTORS DOCUMENT

(Enclosed as a separate bound document.)

SECTION X

SECTION X

ASBESTOS SURVEY

ASBESTOS INSPECTION SUMMARY

POWER HOUSE AND ELECTRICAL BUILDING

<u>MATERIAL</u>	<u>CONTENT %</u>	<u>QUANTITY</u>
Rope	70-75	32 LF
Corrugated Metal	Trace	----
White Ceiling Material	12-18	6525 SF
White Paper Layer	65-70	5940 SF
Vermiculite Insulation	<1	1221 SF

MACHINE SHOP

<u>MATERIAL</u>	<u>CONTENT %</u>	<u>QUANTITY</u>
Window Putty	2-3	430 LF
Black/silver roof layer	15-20	10000 LF

MAIN OFFICE BUILDING

<u>MATERIAL</u>	<u>CONTENT %</u>	<u>QUANTITY</u>
Paper layer under gray/red sheet vinyl	Trace	----
Brown Sheet Vinyl	20-25	532 SF
Brown/tan pebble pattern sheet vinyl	20-25	656 SF
Gray floor tile	6-8	656 SF
Gray window putty	2-4	18 LF
Black Vent tar	10-15	80 LF
White Hard Pipe fittings	55-65	10 EA
White Cloth Pipe Lagging	25-35	68 LF
Gray/ Green vinyl tile	4-8	3600 SF
Red/Gray Sheet Vinyl	25-30	3600 SF

CARPENTER SHOP

<u>MATERIAL</u>	<u>CONTENT %</u>	<u>QUANTITY</u>
Gray Transite Roofing Material	15-20	256 SF

BLAST HEAT EXCHANGER AND PUMP HOUSE

<u>MATERIAL</u>	<u>CONTENT %</u>	<u>QUANTITY</u>
Black Seam Tar	25-30	50 SF
Black fiberglass webbing and tar	3-4	1250 SF
Black/Silver Tar Layer on Metal roof	10-15	1250 SF
Black/Yellow Vent Tar	15-20	15 LF

ACID DECOLORIZATION BUILDING

<u>MATERIAL</u>	<u>CONTENT %</u>	<u>QUANTITY</u>
Exterior Metal	20-30	4012 SF

ASBESTOS INSPECTION SUMMARY

SAMPLE MILL		
MATERIAL	CONTENT %	QUANTITY
Tan/Brown pebble patterned sheet vinyl	20-25	3000 SF
ABANDONED BREAKING FLOOR BUILDING		
MATERIAL	CONTENT %	QUANTITY
Wooly gray seam material	2-4	30 LF
CHARGE BUILDING		
MATERIAL	CONTENT %	QUANTITY
Gray/Blue Transite	15-20	4500 SF
CONTRACTORS CHANGE HOUSE AND LUNCHROOM		
MATERIAL	CONTENT %	QUANTITY
Black Vent Tar	7-10	20 LF
BLAST FURNACE FLUE AND ASSOCIATED BUILDINGS		
MATERIAL	CONTENT %	QUANTITY
Black mastic	10-20	80,000 SF
Silver Paint	7-10	500 SF
MASONS SHOP		
MATERIAL	CONTENT %	QUANTITY
Gray/Blue Transite roofing and roof skirting	15-20	2100 SF
MEETING ROOM		
MATERIAL	CONTENT %	QUANTITY
Black seam tar	18-22	30 LF
MOTOR STORAGE AND PAINT SHOP AND ASSOCIATED STRUCTURE		
MATERIAL	CONTENT %	QUANTITY
Transite paneling	20-22	350 SF
Gray window putty	<1	----
REFRACTORY STORAGE BUILDING		
MATERIAL	CONTENT %	QUANTITY
Silver Paint and Black Roofing	7-20	3800 SF

ASBESTOS INSPECTION SUMMARY

D&L STACK, ASSOCIATED PIPING AND SMALL BUILDINGS

<u>MATERIAL</u>	<u>CONTENT %</u>	<u>QUANTITY</u>
Transite roofing and siding	20-25	400 SF
Tank Insulation	18-25	750 SF
Transite roofing and siding	25-30	2900 SF

ACID PLANT, AUTO SHOP, PUMP TANK BUILDING, MAIN BLOWER BUILDING AND OUTSIDE TANKS

<u>MATERIAL</u>	<u>CONTENT %</u>	<u>QUANTITY</u>
Off white window putty	1-2	135 LF
Paper layer on exterior metal siding and roofing	trace-55	15,400 SF
Black tar paper associated with the metal siding and roofing	15-20	6800 SF
White layer on corrugated metal on tanks	7-10	2500 SF

THAW HOUSE

<u>MATERIAL</u>	<u>CONTENT %</u>	<u>QUANTITY</u>
Gray transite material	18-22	20,000 SF
Black mastic	15-20	17,400 SF
Brick boiler	assumed	1 EA

BAG HOUSE COMPLEX AND ASSOCIATED BUILDINGS

<u>MATERIAL</u>	<u>CONTENT %</u>	<u>QUANTITY</u>
Gray transite material	18-22	1,000 SF
Gray gasket material	40-45	30 LF
Paper Layer	35-40	9,500 SF
Patching Material	10-15	150 LF
Gray Transite material	20-30	19,000 SF

ACID PLANT COOLING TOWERS

<u>MATERIAL</u>	<u>CONTENT %</u>	<u>QUANTITY</u>
Cooling Tower Packing	assumed	----

SECTION XI

SECTION XI

WASTE MATERIALS

WASTE MATERIALS

Waste Material	Location	Approximate Volume
Sulfates	Acid Plant Pipes, Towers, and Tanks	Unknown
Sulfuric Acid	Acid Plant Pipes, Towers, and Tanks	Unknown
Transformer Oils	Transformers Throughout the Demolition Area	Unknown
Lubricating Oils	Gearboxes and Hydraulic Tanks Throughout the Demolition Area	Unknown
Soda Ash	Bin 17 Under Highline Railroad	4 Cubic Yards
Catalyst	Acid Plant Converter	120,000 Liters
Talc	Talc Room at Blast Flue	Unknown
Blast Furnace Dust	Blast Flue, Loadout, and Baghouse	30 Tons
Wood Chips	Bin 18 Under Highline Railroad	2 Tons
Lead Bullion*	Ringling Building	50 Tons
Matte*	Ringling Building	10 Tons
Speiss*	Ringling Building	10 Tons
Dross*	Ringling Building	20 Tons

* Materials included in Additive Alternative "F"

SECTION XII

SECTION XII

WASTE APPROVED FOR DISPOSAL IN THE CAMU

WASTE APPROVED FOR DISPOSAL IN THE CAMU

Category	Waste Material Examples
Montana Decree Waste (Direct result of performing Montana Decree cleaning and demolition)	<ul style="list-style-type: none">- Brick, masonry, and kettles- Fiberglass, pipe, and ACM transite- Soils, slag, and asphalt- Concrete blocks, walls, and slabs- Furnace metal, dust and lead residue- Baghouse bags, belting, lighting- Plastic/ceramic saddles and catalyst- Rail ties, wood, blankets, insulation
Contaminated Debris (Waste located throughout the facility and subject to future Montana Decree action)	<ul style="list-style-type: none">- Industrial-sized vacuum hose- Wood planking- Railroad ties and pallets- Concrete slabs/blocks/rubble- Plastic/PVC piping/rubber belting- Wood chips, soda ash, talc- Soda ash and lime- In Plant Road Sweepings- Slag (mixed with debris)- Temporary stack- Wood fire houses- Adobe clay pile
Montana Decree 2005 Work Plan	<ul style="list-style-type: none">- Acid plant limerock- Zinc plant copper
Excess Contaminated Soil	<ul style="list-style-type: none">- Excess soil excavated under RCRA Decree source control program from slurry wall, PRB- Excess soil excavated under Montana Decree interim capping program- Excess soil excavated under final site wide cap program

SECTION XIII

SECTION XIII

MSDS SHEETS

(MSDS Sheets are included in the Environmental Requirements For Contractors Document.
Any missing MSDS sheets will be handed out at the Pre-Bid Conference.)

Material Safety Data Sheet
MSDS: 616 - UNOCAL TRANSFORMER OIL 10

MSDS: 616

Status: Pending

Revised: 7/10/97

7/11/97

Formula: NOT GIVEN
Specification: NOT GIVEN
Synonyms:
OIL, TRANSFORMER OIL 10
Stock Items: NOT GIVEN

Part Number: NOT GIVEN
Keyword: NOT GIVEN

Manufacturer
UNOCAL REFINING & MARKETING
1201 WEST 5TH STREET
LOS ANGELES, CA 90017

Phone: 213-977-7589
Emergency:

Supplier
UNOCAL REFINING & MARKETING
1201 WEST 5TH STREET
LOS ANGELES, CA 90017

Phone: 213-977-7589
Emergency:

Physical/Chemical Characteristics

Boiling Point	.....	NG	
Melting Point	.....	NG	
Freezing Point	.....	NG	
Pour Point	.....	NG	
Softening Point	.....	NG	
Specific Gravity	.....	0.89	
Vapor Pressure	.....	NG	
Vapor Density	.....	> 1	
Percent Volatiles	.....	NG	NEGLIGIBLE
Evaporation Rate	.....	< 1	
pH	.....	NG	
Molecular Weight	.....	NG	
Viscosity	.....	BT 100csT 115csT	AT 40C
Solubility in Water	...	NEGLIGIBLE	
Odor, Appearance/Other Characteristics:			
WHITE OR YELLOW, LIQUID, CHARACTERISTIC PETROLEUM ODOR			

Fire and Explosion Data

Closed Cup Flash Pt.	..	132°C
Open Cup Flash Point	..	NG
Fire Point	.....	NG
Auto Ignition	.....	NG
Lower Explosion Limit	..	NG
Upper Explosion Limit	..	NG

Shipping Regulations

UN/NA Number: NG
DOT Hazard Class: not classified
Shipping Label: NOT GIVEN
Shipping Name: NOT GIVEN

Prepared

Preparer's Name & Title: NOT GIVEN
Preparation Date: 5/09/94

Component(s):

OIL MIST, IF GENERATED

OSHA Pel: NG ppm 5 mg/m3
ACGIH TLV: NG ppm NG mg/m3
STEL: NG ppm 10 mg/m3

Percent of Product: NG

CAS No.: NOT GIVEN

HYDROTREATED DISTILLATE, MIDDLE

OSHA Pel: NG ppm NG mg/m3
ACGIH TLV: NG ppm NG mg/m3
STEL: NG ppm NG mg/m3

Percent of Product: BT 70% 100%

CAS No.: 64742467

Note: SEE: OIL MIST, IF GENERATED FOR EXPOSURE LIMITS

HYDROTREATED DISTILLATE, LIGHT NAPHTHENIC

OSHA Pel: NG ppm NG mg/m3
ACGIH TLV: NG ppm NG mg/m3
STEL: NG ppm NG mg/m3

Percent of Product: BT 0% 30%

CAS No.: 64742536

Note: SEE: OIL MIST, IF GENERATED FOR EXPOSURE GUIDELINES

Text Section(s)

COMPOSITION/INFORMATION ON INGREDIENTS

NOTE: OSHA exposure limits adopted in 1989 were vacated by the U.S. COURT OF APPEALS. OSHA PEL's listed above (if any) may be included in those that were overturned, but are provided as guidance. Enforceable limits may be less stringent or not yet established.

HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS

EYE: Eye irritant. Contact may cause stinging, watering, redness, and swelling.

SKIN: Contact may cause mild skin irritation including redness, burning, and drying and cracking of the skin. No harmful effects from skin absorption have been reported.

INHALATION (BREATHING): No information available. Studies by other exposure routes suggest a low degree of toxicity by inhalation.

INGESTION (SWALLOWING): Low degree of toxicity by ingestion. Aspiration hazard - This material can enter lungs during swallowing or vomiting and cause lung inflammation and damage.

SIGNS AND SYMPTOMS: Effects of overexposure may include irritation of the nose and throat and irritation of the digestive tract, nausea, signs of nervous system depression (e.g., headache, drowsiness, dizziness, loss of coordination, and fatigue), giddiness and unconsciousness

CANCER: Inadequate evidence available to evaluate the cancer hazard of this material. See Toxicological information carcinogenicity information of individual components, if any.

TARGET ORGANS: Potential hazard to the liver (see section 11).

DEVELOPMENTAL: No data available.

PRE-EXISTING MEDICAL CONDITIONS: Conditions aggravated by exposure may include skin disorders, respiratory (asthma-like) disorders and liver disorders.

FIRST AID MEASURES

EYE: Move victim away from exposure and into fresh air. If irritation or redness develops, flush eyes with clean water and seek medical attention. For direct contact, hold eyelids apart and flush the affected eye(s) with clean water for at least 15 minutes. Seek medical attention.

SKIN: Wipe material from skin and remove contaminated shoes and clothing. Cleanse affected area(s) thoroughly by washing with mild soap and water and, if necessary, a waterless skin cleanser. If irritation or redness develops and persists, seek medical attention.

INHALATION: If respiratory symptoms develop, move victim away from source of exposure and into fresh air. If symptoms persist, seek medical attention. If victim is not breathing, immediately begin artificial respiration. If breathing difficulties develop, oxygen should be administered by qualified personnel. Seek immediate medical attention.

INGESTION: Aspiration hazard - Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. If victim is drowsy or unconscious, place on the left side with the head down. If possible, do not leave victim unattended. Seek medical attention.

NOTE TO PHYSICIANS: Acute aspiration of large amounts of oil-laden material may produce a serious aspiration pneumonia. Patients who aspirate these oils should be followed for the development of long-term sequelae. Repeated aspiration of small quantities of mineral oil may produce chronic inflammation of the lung (i.e., lipoid pneumonia) that may progress to pulmonary fibrosis. Symptoms often are subtle and radiological changes appear worse than clinical abnormalities. Occasionally, persistent cough, irritation of the upper respiratory tract, shortness of breath with exertion, fever, and bloody sputum occur. Inhalation exposure to oil mists below current workplace exposure limits is unlikely to cause pulmonary abnormalities.

FIRE FIGHTING MEASURES

UNUSUAL FIRE & EXPLOSION HAZARDS: This material may burn, but will not ignite readily. Vapors are heavier than air and can accumulate in low areas. If container is not properly cooled, it can explode in the heat of a fire.

EXTINGUISHING MEDIA: Dry chemical, carbon dioxide, halon, foam or water spray is recommended. Water or foam may cause frothing of materials heated above 212F. Halon may decompose into toxic materials. Carbon dioxide can displace oxygen. Use caution when applying halon or carbon dioxide in confined spaces.

FIRE FIGHTING INSTRUCTIONS: Emergency responders in the danger area should wear bunker gear and self-contained breathing apparatus for fires beyond the incipient stage. In addition, wear other appropriate protective equipment as conditions warrant. Isolate damage area, keep unauthorized personnel out. Stop spill/release if it can be done with minimal risk. Move undamaged containers from danger area if it can be done with minimal risk. Water spray may be useful in minimizing or dispersing vapors. Cool equipment exposed to fire with water, if it can be done with minimal risk. Avoid spreading burning liquid with water used for cooling purposes.

ACCIDENTAL RELEASE MEASURES

This material may burn, but will not ignite readily. Keep all sources of ignition away from spill/release. Use explosion-proof equipment. Stay upwind and away from spill/release. Isolate danger area and keep unauthorized personnel out. Stop spill/release if it can be done with minimal risk. Wear appropriate protective equipment including respiratory protection as conditions warrant. Prevent spilled material from entering sewers, storm drains, other unauthorized treatment drainage systems, and natural waterways. Dike far ahead of spill for later recovery or disposal. Spilled material may be absorbed into an appropriate absorbent material. Notify fire authorities and appropriate federal, state, and local agencies. Immediate cleanup of any spill is recommended. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, notify the National Response Center (phone number 800/424-8802)

HANDLING AND STORAGE

HANDLING: Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29 CFR 1910.146. The use of respiratory protection is advised when concentrations exceed any established limits. Wash thoroughly after handling. do not wear contaminated clothing or shoes. Use good personal hygiene practice.

"Empty" containers retain residue (liquid and/or vapor) and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. "Empty" drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. Before working on or in tanks which contain or have contained this material, refer to OSHA regulations ANSI A49.1 and other governmental and industrial references pertaining to cleaning, repairing, welding, or other contemplated operations.

STORAGE: Keep container(s) tightly closed. Use and store this material in cool, dry, well-ventilated areas away from heat and all sources of ignition. Store only in approved containers. Keep away from any incompatible material. Protect container(s) against physical damage.

EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits, additional ventilation or exhaust systems may be required.

PERSONAL PROTECTIVE EQUIPMENT (PPE):

RESPIRATORY: The use of respiratory protection is advised when concentrations are expected to exceed the established exposure limits. Depending on the airborne concentrations, use a respirator with appropriate cartridges (NIOSH approved, if available) or supplied air equipment.

SKIN: The use of gloves impermeable to the specific material handled is advised to prevent skin contact and possible irritation.

EYE/FACE: Approved eye protection to safeguard against potential eye contact irritation, or injury is recommended.

OTHER PROTECTIVE EQUIPMENT: It is suggested that a source of clean water be available in the work area for flushing eyes and skin. Impervious clothing should be worn as needed.

STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under normal conditions of storage and handling.

CONDITIONS TO AVOID: Extended exposure to high temperatures can cause decomposition.

INCOMPATIBLE MATERIALS: Avoid contact with strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS: Combustion can yield major amounts of oxides of carbon and minor amounts of oxides of nitrogen, phosphorus, sulfur, and zinc.

HAZARDOUS POLYMERIZATION: Will not occur.

DISPOSAL CONSIDERATIONS

This material, as produced, is not an EPA "listed" hazardous waste, but has not been evaluated using the Toxicity Characteristic Leaching Procedure. The EPA hazardous waste classification has not been determined.

Empty containers must be handled with care due to material residue. Empty drums should be completely drained, properly bunged, and promptly returned to the supplier or shipped to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner in accordance with governmental regulations. Any rinsate may be considered RCRA hazardous waste and must be disposed of with care.

State and local requirements for waste disposal may be more restrictive or otherwise different from federal regulations. Consult state and local regulations regarding the proper disposal of this material.

REGULATORY INFORMATION

This material contains the following chemicals subject to the reporting requirements of SARA 313 and 40 CFR 372:

--none--

WARNING: This material contains the following chemicals which are known to the State of California to cause cancer, birth defects or other reproductive harm, and are subject to the requirements of California Proposition 65.

Used engine oils, while not a component of this materials, is on the Proposition 65 list of chemicals known to the State of California to cause cancer.

This material has not been identified as a carcinogen by NTP, IARC, or OSHA. For carcinogenicity information on individual components, see Toxicological information.

TOXICOLOGICAL INFORMATION

HYDROTREATED DISTILLATE, LIGHT NAPHTHENIC

TARGET ORGANS: Administration of hydrotreated light naphthenic distillate in the diet to rats at 1500 mg/kg/day for 90 days resulted in limited evidence of liver damage characterized by increased liver weight, increased hepatic serum enzyme activity, and development of granulomatous tissues.

End of MSDS

Material Safety Data Sheet
MSDS: 1207 - COPPER SPEISS - ASARCO

MSDS: 1207

Status: Current

Revised: 9/09/98

9/09/98

Formula: COMPLEX MISTURE
Specification: NOT GIVEN
Synonyms:
NOT GIVEN
Stock Items: NOT GIVEN

Part Number: NOT GIVEN
Keyword: NOT GIVEN

Manufacturer
ASARCO, INC.
180 MAIDEN LANE
NEW YORK, NY USA 10038

Phone: 212-510-2000
Emergency:

Supplier
ASARCO, INC.
180 MAIDEN LANE
NEW YORK, NY USA 10038

Phone: 212-510-2000
Emergency:

Physical/Chemical Characteristics

Boiling Point : NG
Melting Point : NG
Freezing Point : NG
Pour Point : NG
Softening Point : NG
Specific Gravity : NG
Vapor Pressure : NG
Vapor Density : NG
Percent Volatiles : NG
Evaporation Rate : NG
pH : NG
Molecular Weight : NG
Viscosity : NG
Solubility in Water : NOT GIVEN
Odor/Appearance/Other Characteristics: NOT GIVEN

Fire and Explosion Data

Closed Cup Flash Pt. : NG
Open Cup Flash Point : NG
Fire Point : NG
Auto Ignition : NG
Lower Explosion Limit : NG
Upper Explosion Limit : NG

Shipping Regulations

UN/NA Number: NG
DOT Hazard Class: NOT GIVEN
Shipping Label: NOT GIVEN
Shipping Name: NOT GIVEN

Prepared

Preparer's Name & Title: NOT GIVEN
Preparation Date: 3/20/87

Component(s):

COPPER

OSHA Pel: NG ppm NG mg/m3
ACGIH TLV: NG ppm NG mg/m3
STEL: NG ppm NG mg/m3
Percent of Product: BT 50% 60% CAS No.: 7440508
Note: 0.1 MG/CU.M.-FUME; 1.0 MG/CU.M.-DUST (OSHA)

ARSENIC

OSHA Pel: NG ppm NG mg/m3
ACGIH TLV: NG ppm NG mg/m3
STEL: NG ppm NG mg/m3
Percent of Product: BT 16% 20% CAS No.: 7440382
Note: Permissible Air Concentration: 0.01 mg/cu.m. (OSHA)

LEAD

OSHA Pel: NG ppm NG mg/m3
ACGIH TLV: NG ppm NG mg/m3
STEL: NG ppm NG mg/m3
Percent of Product: BT 11% 14% CAS No.: 7439921
Note: Permissible Air Concentration: 0.05 mg/cu.m. (OSHA)

ANTIMONY

OSHA Pel: NG ppm NG mg/m3
ACGIH TLV: NG ppm NG mg/m3
STEL: NG ppm NG mg/m3
Percent of Product: BT 8% 12% CAS No.: 7440360
Note: Permissible Air Concentration: 0.5 mg/cu.m. (OSHA)

NICKEL

OSHA Pel: NG ppm NG mg/m3
ACGIH TLV: NG ppm NG mg/m3
STEL: NG ppm NG mg/m3
Percent of Product: BT 1% 1.5% CAS No.: 7440020
Note: Permissible Air Concentration: 1.0 mg/cu.m. OSHA

Text Section(s)

A. GENERAL INFORMATION

Trade Name: Copper Speiss

Chemical Name: Mixture of metallics, arsenides and antimonides

Formula: Complex Mixture

Company:
ASARCO
180 Maiden Lane
New York, New York 10038 Phone 212-510-2000

Contact:

General Information:
Department of Environmental Sciences DAY 801-262-2459
NIGHT 802-943-1754

First Aid Information - (Dr. C. H. Hine) DAY 415-777-2213
NIGHT 415-777-2214

Transportation Emergencies: CHEMTREC 800-424-9300

Issue Date: 1/2/86 Revised Date: 3/20/87

B. HAZARDOUS INGREDIENTS

SEE COMPONENT INFORMATION

C. FIRST AID MEASURES

Inhalation: Remove from exposure; place individual under care of physician.

Ingestion: Induce vomiting in conscious individual and call a physician.

Skin: Wash thoroughly with soap and water.

Eyes: Immediately flush eyes with large amounts of water.

D. HAZARDOUS MATERIALS IDENTIFICATION

PRODUCT: COPPER SPEISS

HAZARDOUS CHEMICALS: COPPER, ARSENIC, LEAD, ANTIMONY, NICKEL

PERSONAL PROTECTION INDEX: E

Page 4

HAZARD INDEX:

1. HEALTH 2
2. FLAMMABILITY 0
3. REACTIVITY 0

SPECIAL PRECAUTIONS:

Inhalation: Respiratory tract irritation, gastrointestinal distress

Ingestion: Irritation of stomach lining and intestines

Skin: Dermatitis may result from repeated exposure

Eyes: Irritant

Unusual Chronic Toxicity: Damage to liver, kidneys, nervous system and blood forming activity. Possible increase in cancers of the skin, respiratory tract, lymphocytic system and liver.

End of MSDS

Material Safety Data Sheet

MSDS: 561

MSDS: 561 - COPPER DROSS -- EAST HELENA

2/26/95

Status: Current

Revised: 2/03/95

Formula: COMPLEX MIXTURE

Part Number:

Specification:

Keyword:

Synonyms:

DROSS

MIXED OXIDES

Stock Items:

Manufacturer

ASARCO, INC. (EAST HELENA)

BOX 1230

EAST HELENA, MT 59635

Phone: 406-227-7100

Emergency: 415-457-0383

Supplier

ASARCO, INC. (EAST HELENA)

BOX 1230

EAST HELENA, MT 59635

Phone: 406-227-7100

Emergency: 415-457-0383

Physical/Chemical Characteristics

Boiling Point

Melting Point

Freezing Point

Pour Point

Softening Point

Specific Gravity

Vapor Pressure

Vapor Density

Percent Volatiles

Evaporation Rate

pH

Molecular Weight

Viscosity

Solubility in Water ..: INSOLUBLE

Odor/Appearance/Other Characteristics: SOLID/HEAVY CHUNKS

Fire and Explosion Data

Closed Cup Flash Pt. ..:

Open Cup Flash Point ..:

Fire Point

Auto Ignition

Lower Explosion Limit :

Upper Explosion Limit :

Shipping Regulations

UN/NA Number:

DOT Hazard Class:

Shipping Label:

Shipping Name:

Material Safety Data Sheet
MSDS: 561 - COPPER DROSS -- EAST HELENA

MSDS: 561

Page 2

Prepared

Preparer's Name & Title: DEPARTMENT OF ENVIRONMENTAL SCIENCES

Preparation Date: 5/21/86

Component(s):

LEAD

OSHA Pel: 0.05 mg/m3

ACGIH TLV: 0.15 mg/m3

STEL:

Percent of Product: BT 60% 65%

CAS No.: 7439921

COPPER (FUME)

OSHA Pel: 0.1 mg/m3

ACGIH TLV: 0.2 mg/m3

STEL:

Percent of Product: BT 20% 24%

CAS No.: 7440508

COPPER (DUST)

OSHA Pel: 1.0 mg/m3

ACGIH TLV: 1.0 mg/m3

STEL:

Percent of Product: BT 20% 24%

CAS No.: 7440508

IRON (FUME)

OSHA Pel: 10.0 mg/m3

ACGIH TLV: 10.0 mg/m3

STEL:

Percent of Product: 1%

CAS No.: 7439896

ANTIMONY

OSHA Pel: 0.5 mg/m3

ACGIH TLV: 0.5 mg/m3

STEL:

Percent of Product: 1%

CAS No.: 7440360

ARSENIC

OSHA Pel: 0.01 mg/m3

ACGIH TLV: 0.2 mg/m3

STEL:

Percent of Product: 1%

CAS No.: 7440382

Text Section(s)

First Aid Measures

FIRST AID MEASURES

INHALATION: Remove from exposure; place individual under care of physician.

INGESTION: Induce vomiting in conscious individual and call a physician.

SKIN: Wash thoroughly with soap and water.

EYES: Immediately flush with large amounts of water.

HAZARD INFORMATION

HAZARD INFORMATION

HAZARD INFORMATION

INHALATION: Dust or fumes may cause respiratory tract irritation, gastrointestinal distress and systemic poisoning with symptoms including abdominal pain, loss of appetite, nausea, dry throat, dizziness, fatigue, insomnia, constipation, and chills and fever.

INGESTION: Severe irritation of lining of stomach and intestines may occur. Ingestion may cause gastrointestinal distress and other symptoms as above.

SKIN: Dermatitis may result from repeated skin contact.

EYES: Severe irritation of the eyes or conjunctivitis may occur.

MEDICAL CONDITIONS POSSIBLY AGGRAVATED: Diseases of the liver, kidneys, nervous system, blood, blood forming organs, and possibly reproductive system. Diseases of the lungs. Wilson's disease may be affected by copper exposure.

UNUSUAL CHRONIC TOXICITY: Damage to the liver, kidneys, nervous system and blood forming activity. Potential injury to developing fetus and possible effects on reproduction. Possible increase in cancers of the skin, respiratory tract, lymphocytic system and liver.

FIRE AND EXPLOSION HAZARD

NOT APPLICABLE

PRECAUTIONS AND PROCEDURES

PRECAUTIONS AND PROCEDURES

PRECAUTIONS AND PROCEDURES

FIRE EXTINGUISHING AGENTS RECOMMENDED: No specific agents recommended.

FIRE EXTINGUISHING AGENTS TO AVOID: No specific agents.

SPECIAL FIRE FIGHTING PRECAUTIONS: Use NIOSH/MSHA approved self-contained breathing apparatus and full protective clothing if involved in fire.

Material Safety Data Sheet

MSDS: 561

MSDS: 561 - COPPER DROSS -- EAST HELENA

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ENGINEERING CONTROLS: Local exhaust ventilation is required for screening, heating, dumping, shoveling, or other operations where excessive airborne exposures may occur.

NORMAL HANDLING: Use any methods which keep dust to a minimum.

STORAGE: General storage procedures acceptable.

SPILL OR LEAK: Any method which keeps dust to a minimum is acceptable. Vacuuming is preferred.

SPECIAL PRECAUTIONS/PROCEDURES/LABELING INSTRUCTIONS: Refer to OSHA Standards on Inorganic Arsenic and Lead if airborne exposures above OSHA PEL exist.

PERSONAL HYGIENE: Practice good housekeeping and personal hygiene procedures. No tobacco or food in work area. Wash thoroughly before eating or smoking. Avoid ingestion or inhalation. Take a shower and change clothes at end of shift. Do not wear contaminated clothing home. Do not use compressed air for blowing dust off of clothes.

RESPIRATORY PROTECTION: NIOSH/MSHA approved respirator for toxic dust and/or fume.

EYE AND FACE: Safety glasses required where the possibility of getting dust particles in eyes exists.

HANDS, ARMS, AND BODY: Gloves or other protective clothing required if skin contact is appreciable.

OTHER CLOTHING AND EQUIPMENT: Full protective clothing (coveralls) is required if the permissible exposure limit is exceeded. Recommended for any operation with significant skin contact. All contaminated clothing should be removed before leaving plant premises.

REACTIVITY DATA
STABLE

CONDITIONS TO AVOID: NOT APPLICABLE

INCOMPATIBILITY (MATERIAL TO AVOID): NONE KNOWN

HAZARDOUS DECOMPOSITION PRODUCTS: At temperatures above the melting point, metal oxide fumes may be evolved.

Material Safety Data Sheet

MSDS: 561

MSDS: 561 - COPPER DROSS -- EAST HELENA

Page 5

HAZARDOUS POLYMERIZATION: Will not occur

CONDITION TO AVOID: NOT APPLICABLE

ENVIRONMENTAL DATA

ENVIRONMENTAL DATA

EPA HAZARDOUS SUBSTANCE? NO

WASTE DISPOSAL METHODS: Hazardous if listed under 40 CFR 264.31 or 32, or possesses characteristics of 40 CFR 261 Subpart C.

If hazardous, must be treated, stored, or disposed in a facility meeting the requirements of 40 CFR 264 or 265. If non-hazardous, dispose in a facility meeting the requirements of 40 CFR 257. State and local requirements may differ.

RCRA STATUS OF UNUSED MATERIAL: If discarded in unaltered form, should be tested in accordance with 40 CFR 1910.1000, 1913.1018, 1910.1025.

SEE ORIGINAL MSDS FOR FURTHER REFERENCES

End of MSDS

Material Safety Data Sheet
MSDS: 509 - COPPER MATTE -- EH ASARCO

MSDS: 509

Status: Pending

Revised: 7/10/97

7/11/97

Formula: COMPLEX MIXTURE
Specification: NOT GIVEN
Synonyms:
EH COPPER MATTE, ASARCO
Stock Items: NOT GIVEN

Part Number: NOT GIVEN
Keyword: NOT GIVEN

Manufacturer

ASARCO, INC. (NEW YORK)
180 MAIDEN LANE
NEW YORK, NY 10038

Phone: 212-510-2000
Emergency: 415-777-2213

Supplier

ASARCO, INC. (NEW YORK)
180 MAIDEN LANE
NEW YORK, NY 10038

Phone: 212-510-2000
Emergency: 415-777-2213

Physical/Chemical Characteristics

Boiling Point NG
Melting Point 1200°C
Freezing Point NG
Pour Point NG
Softening Point NG
Specific Gravity NG
Vapor Pressure NG
Vapor Density NG
Percent Volatiles NG
Evaporation Rate NG
pH NG
Molecular Weight NG
Viscosity NG
Solubility in Water ... NOT AVAILABLE

Color/Appearance/Other Characteristics: SOLID DARK-GRAY CHUNKS

Fire and Explosion Data

Closed Cup Flash Pt. .. NG
Open Cup Flash Point .. NG
Fire Point NG
Auto Ignition NG
Lower Explosion Limit : NG
Upper Explosion Limit : NG

Shipping Regulations

UN/NA Number: NG
DOT Hazard Class: RQ OF 1 POUND
Shipping Label: WARNING
Shipping Name: NOT GIVEN

Prepared

Preparer's Name & Title: DEPARTMENT OF ENVIRONMENTAL SCIENCES
Preparation Date: 12/27/91

Component(s):

LEAD

OSHA Pel:	NG ppm	.05 mg/m3	
ACGIH TLV:	NG ppm	0.15 mg/m3	
STEL:	NG ppm	NG mg/m3	
Percent of Product:	BT 2% 3%		CAS No.: 7439921
Note:	SARA TITLE III (313)	-- YES	

COPPER (DUST)

OSHA Pel:	NG ppm	1.0 mg/m3	
ACGIH TLV:	NG ppm	1.0 mg/m3	
STEL:	NG ppm	NG mg/m3	
Percent of Product:	BT 25% 35%		CAS No.: 7440508
Note:	SARA TITLE III (313)	-- YES	

IRON

OSHA Pel:	NG ppm	NP mg/m3	
ACGIH TLV:	NG ppm	NP mg/m3	
STEL:	NG ppm	NG mg/m3	
Percent of Product:	BT 3% 15%		CAS No.: 7439896
Note:	SARA TITLE III (313)	-- NO	

ARSENIC

OSHA Pel:	NG ppm	0.01 mg/m3	
ACGIH TLV:	NG ppm	0.2 mg/m3	
STEL:	NG ppm	NG mg/m3	
Percent of Product:	< .5%		CAS No.: 7440382
Note:	SARA TITLE III (313)	-- YES	

ZINC

OSHA Pel:	NG ppm	NP mg/m3	
ACGIH TLV:	NG ppm	NP mg/m3	
STEL:	NG ppm	NG mg/m3	
Percent of Product:	BT 2% 3%		CAS No.: 7440566
Note:	SARA TITLE III (313)	-- YES	

Text Section(s)

FIRST AID MEASURES

INHALATION: Remove from exposure; place individual under care of a physician.

INGESTION: Induce vomiting in conscious individual and call a physician.

SKIN OR EYES: Flush with plenty of water. If symptoms develop, consult a physician.

HEALTH HAZARD INFORMATION

PRIMARY ROUTES OF ENTRY: INHALATION

CARCINOGENICITY: IARC classifies lead as Group 2b carcinogens (possibly carcinogenic to humans). IARC, NTP, AND OSHA classify arsenic and its compounds as a human carcinogen.

CHRONIC OVEREXPOSURE (SYMPTOMS AND EFFECTS): Chronic overexposure to lead may cause damage to the blood-forming, nervous and reproductive systems and kidneys. Damage may include reduced fertility in both men and women, damage to the fetus of exposed pregnant women, anemia, muscular weakness and kidney disfunction. Symptoms of chronic lead overexposure include: tiredness, uneasy stomach, irritability, poor appetite, metallic taste and loss of sleep. Prolonged overexposure to arsenic compounds may cause liver and kidney abnormalities, peripheral neuritis of the hands and feet, and an increased risk of lung cancer. Symptoms include weight loss, nausea, diarrhea, weakness, loss of appetite and skin lesions.

ACUTE OVEREXPOSURE (SYMPTOMS AND EFFECTS): Extremely high doses of lead may cause encephalopathy, a brain condition that can result in seizures, coma and death. It should be recognized, however, that exposures of this magnitude in an industrial environment are extremely unlikely.

Soluble copper salts can cause respiratory irritation, and irritation and/or burns to the skin and eyes.

Arsenic compounds may cause irritation of the respiratory system, skin and eye irritation and gastrointestinal disturbances.

Metal fume fever with symptoms of fever, chills, metallic taste, chest tightness or nausea may result from inhalation of zinc oxide fume or dust.

FIRE AND EXPLOSION HAZARDS DATA

FLASH POINT: N/A

AUTO IGNITION TEMPERATURE: N/A

FLAMMABLE LIMITS IN AIR (% BY VOLUME): N/A

UNUSUAL FIRE AND EXPLOSION HAZARDS: N/A

FIRE EXTINGUISHING AGENT RECOMMENDED: No specific agents recommended

FIRE EXTINGUISHING AGENTS TO AVOID: No specific agents

SPECIAL FIRE FIGHTING PRECAUTIONS: Use NIOSH/MSHA approved self-contained breathing apparatus and full protective clothing if involved in fire.

PRECAUTIONS/PROCEDURES

NORMAL HANDLING: Use approved respirators is required for applications where adequate ventilation cannot be provided. Activities which generate dust or fume should be avoided. When melted, the temperature should be kept as low as possible.

ENGINEERING CONTROLS: Local exhaust ventilation is recommended for dust and/or fume generating operations where airborne exposures may exceed permissible air concentrations.

SPILL OR LEAK: Any method which keeps dust to a minimum is acceptable. Vacuuming is preferred for dust. Use approved respiratory protection if possibility of dust/fume exposure exists. Do not use compressed air for cleaning.

STORAGE: General storage procedures acceptable.

PERSONAL HYGIENE: Avoid inhalation of ingestion. Practice good housekeeping and personal hygiene procedures. No tobacco or food in work area. Wash thoroughly before eating or smoking. Shower and change clothes at end of work shift. Do not wear contaminated clothing home. Do not blow dust off clothing with compressed air.

SPECIAL PRECAUTIONS/PROCEDURES/LABEL INSTRUCTIONS: Where airborne exposures may exceed the OSHA action level and or PEL, refer to the OSHA Arsenic Standard 29 CFR 1910.1018 or Lead Standard 1910.1025.

TABLE SIGNAL WORD: WARNING

PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY PROTECTION: Where airborne exposures may exceed OSHA/ACGIH permissible air concentrations, the minimum respiratory protection recommended is a negative pressure air purifying respirator with cartridges that are NIOSH/MSHA approved against dust, fumes, and mists have a TWA less than 0.05 mg/cu.m.

EYE AND FACE: Safety glasses recommended where the possibility of getting dust particles in eyes exists.

OTHER CLOTHING AND EQUIPMENT: Full protective clothing is recommended for exposures that exceed permissible air concentrations. All contaminated clothing should be removed before leaving the plant.

REACTIVITY DATA

STABLE
CONDITIONS TO AVOID: N/A

INCOMPATIBILITIES (MATERIALS TO AVOID): Under reducing conditions (i.e., any strong acid or base plus an active metal) or in the presence of nascent hydrogen, highly toxic stibine or arsine gas may be evolved.

HAZARDOUS DECOMPOSITION PRODUCTS: At temperatures above the melting point, metal oxide fumes may be evolved.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: N/A

ENVIRONMENTAL DATA

REGULATED BY DOT? This material contains arsenic compounds which are DOT Hazardous Substances with an RQ of 1 pound.

WASTE DISPOSAL METHODS: If hazardous under 40 CFR 261, Subparts B and C, material must be treated or disposed in a facility meeting the requirements of 40 CFR 264 or 265. If non-hazardous, material should be disposed in a facility meeting the requirements of 40 CFR 257.

RCRA STATUS OF UNUSED MATERIAL: If discarded in unaltered form, material should be tested to determine if it must be classified as a hazardous waste for disposal purposes. Under specific circumstances, application can be made to the EPA Administrator to have a particular waste designated non-hazardous.

REFERENCES

SEE ORIGINAL MSDS FOR REFERENCES

End of MSDS

Material Safety Data Sheet

MSDS: 38 - BLAST FURNACE BAGHOUSE DUST, EH ASARCO

MSDS: 38

7/10/97

Status: Pending

Revised: 7/09/97

Formula: COMPLEX MIXTURE

Part Number: NOT GIVEN

Specification: NOT GIVEN

Keyword: NOT GIVEN

Synonyms:

CADIUM DUST, EH ASARCO; EH BLAST FURNACE BAGHOUSE DUST; EH CADMIUM DUST

Stock Items: NOT GIVEN

Manufacturer

ASARCO, INC. (NEW YORK)
180 MAIDEN LANE
NEW YORK, NY 10038

Phone: 212-510-2000
Emergency: 415-777-2213

Supplier

ASARCO, INC. (NEW YORK)
180 MAIDEN LANE
NEW YORK, NY 10038

Phone: 212-510-2000
Emergency: 415-777-2213

Physical/Chemical Characteristics

Boiling Point	NA	NOT AVAILABLE.
Melting Point	NA	NOT AVAILABLE.
Freezing Point	NG	
Pour Point	NG	
Softening Point	NG	
Specific Gravity	NA	NOT AVAILABLE.
Vapor Pressure	NA	NOT APPLICABLE.
Vapor Density	NA	NOT APPLICABLE.
Percent Volatiles	NG	
Evaporation Rate	NA	NOT APPLICABLE.
pH	NA	NOT AVAILABLE.
Molecular Weight	NA	NOT APPLICABLE.
Viscosity	NG	
Solubility in Water ...	NOT AVAILABLE.	
Odor/Appearance/Other Characteristics:		
ODORLESS / GRAY POWDER / MATERIAL IS SOLID.		

Fire and Explosion Data

Closed Cup Flash Pt. ..	NA	NOT APPLICABLE.
Open Cup Flash Point ..	NA	NOT APPLICABLE.
Fire Point	NG	
Auto Ignition	NA	NOT APPLICABLE.
Lower Explosion Limit ..	NA	NOT APPLICABLE.
Upper Explosion Limit ..	NA	NOT APPLICABLE.

Shipping Regulations

UN/NA Number: NG
DOT Hazard Class: NG
Shipping Label: NOT GIVEN
Shipping Name: NOT GIVEN

Prepared

Preparer's Name & Title:
DEPT OF ENVIRONMENTAL SCIENCES; 801-262-2459 DAY; 801-561-3044 NIGHT
Preparation Date: 10/28/92

Component(s):

LEAD
OSHA Pel: NG ppm .05 mg/m3
ACGIH TLV: NG ppm .15 mg/m3
STEL: NG ppm NG mg/m3
Percent of Product: BT 15% 25% CAS No.: 7439921

ARSENIC
OSHA Pel: NG ppm .01 mg/m3
ACGIH TLV: NG ppm .2 mg/m3
STEL: NG ppm NG mg/m3
Percent of Product: EQ 1% CAS No.: 7440382

ZINC
OSHA Pel: NONE ppm NG mg/m3
ACGIH TLV: NONE ppm NG mg/m3
STEL: NG ppm NG mg/m3
Percent of Product: BT 25% 33% CAS No.: 7440666

CADMIUM
OSHA Pel: NG ppm .2 mg/m3
ACGIH TLV: NG ppm .05 mg/m3
STEL: NG ppm NG mg/m3
Percent of Product: BT 16% 20% CAS No.: 7440439
Note: * TLV & PEL: DUST.

FOR ALL COMPONENTS: PERCENT BY WEIGHT.
OSHA Pel: NG ppm NG mg/m3
ACGIH TLV: NG ppm NG mg/m3
STEL: NG ppm NG mg/m3
Percent of Product: NG CAS No.: NOT GIVEN

Text Section(s)

GENERAL INFORMATION

SEE DATA PAGES FOR ADDITIONAL INFORMATION.

Material Safety Data Sheet
MSDS: 38 - BLAST FURNACE BAGHOUSE DUST, EH ASARCO

MSDS: 38

Page 3

TRADE NAME (COMMON NAME OR SYNONYM): East Helena Blast Furnace Baghouse Dust,
Baghouse Cadmium Dust.

CHEMICAL NAME: Complex Mixture.

ASARCO PRODUCT CODE #: Not applicable.

MANUFACTURER:

ASARCO INCORPORATED
180 Maiden Lane
New York, New York 10038

PHONE: 212-510-2000.

CONTACT:

GENERAL INFORMATION:

DEPARTMENT OF ENVIRONMENTAL SCIENCES:

DAY: 801-262-2459.

NIGHT: 801-561-3044.

FIRST AID INFORMATION:

MEDICAL DEPT.: 415-457-0383.

TRANSPORT EMERGENCIES:

CHEMTREC: 800-424-9300.

ISSUE DATE: 1/13/86.

INGREDIENTS

SEE COMPONENT PAGE(S) FOR ADDITIONAL INFORMATION.

MATERIAL OR COMPONENT

SARA TITLE III SECT. 313 CHEMICALS

LEAD	YES
ARSENIC	YES
ZINC	YES
CADMIUM	YES

FIRST AID MEASURES

INHALATION: Remove from exposure; place individual under care of physician.

INGESTION: Induce vomiting in conscious individual and call a physician.

SKIN OR EYES: Flush with plenty of water. If symptoms develop, consult a physician.

HEALTH HAZARD INFORMATION

PRIMARY ROUTES OF ENTRY: INHALATION.

CARCINOGENICITY: IARC classifies lead and certain lead compounds, and antimony oxide as Group 2B carcinogens (possibly carcinogenic to humans).

IARC, NTP and OSHA classify arsenic and its compounds as a human carcinogen. IARC and NTP classify cadmium compounds as Group 2A and Sufficient, respectively.

ACUTE OVEREXPOSURE (SYMPTOMS AND EFFECTS):

Extremely high doses of lead may cause encephalopathy, a brain condition that can result in seizures, coma and death. It should be recognized, however, that exposures of this magnitude in an industrial environment are extremely unlikely.

Arsenic and antimony compounds may cause irritation of the respiratory system, skin and eye irritation and gastrointestinal disturbances. Inhalation of dust or fume from cadmium compounds may cause irritation of the nose and throat. Inhalation of high concentrations of freshly formed fume may cause delayed reaction of pulmonary edema with symptoms of coughing, chest pain, chills, shortness of breath and weakness. Metal fume fever with symptoms of fever, chills, metallic taste, chest tightness or nausea may result from inhalation of zinc oxide fume or dust.

CHRONIC OVEREXPOSURE (SYMPTOMS AND EFFECTS):

Chronic overexposure to lead may cause damage to the blood-forming, nervous and reproductive systems and kidneys. Damage may include reduced fertility in both men and women, damage to the fetus of exposed pregnant women, anemia, muscular weakness and kidney dysfunction. Symptoms of chronic lead overexposure include: tiredness, uneasy stomach, irritability, poor appetite, metallic taste and loss of sleep.

Prolonged overexposure to arsenic and antimony compounds may cause liver and kidney abnormalities, peripheral neuritis of the hands and feet, and a increased risk of cancer. Symptoms include weight loss, nausea, diarrhea, weakness, loss of appetite and skin lesions. Long term overexposure to cadmium compounds may cause lung injury and kidney dysfunction. Inhalation of cadmium compounds may pose a risk of lung cancer.

MEDICAL CONDITIONS POSSIBLY AGGRAVATED: Diseases of the lung, kidney, liver and nervous system.

FIRE AND EXPLOSION

SEE DATA PAGES FOR ADDITIONAL INFORMATION..

UNUSUAL FIRE AND EXPLOSION HAZARDS: Not Applicable.

FIRE EXTINGUISHING AGENTS RECOMMENDED: No specific agents recommended.

FIRE EXTINGUISHING AGENTS TO AVOID: No specific agents.

SPECIAL FIRE FIGHTING PRECAUTIONS: Use NIOSH/MSHA approved self-contained breathing apparatus and full protective clothing if involved in fire.

PRECAUTIONS/PROCEDURES

NORMAL HANDLING: Use of approved respirators is required for applications where adequate ventilation cannot be provided. Activities which generate dust or fume should be avoided. When melted, the temperature should be kept as low as possible.

SPILL OR LEAK: Any method which keeps dust to a minimum is acceptable. Vacuuming is preferred for dust. Use approved respiratory protection if possibility of dust/fume exposure exists. Do not use compressed air for cleaning.

ENGINEERING CONTROLS: Local exhaust ventilation is recommended for dust and/or fume generating operations where airborne exposures may exceed permissible air concentrations.

STORAGE: General storage procedures acceptable.

PERSONAL HYGIENE: Avoid inhalation or ingestion. Practice good housekeeping and personal hygiene procedures. No tobacco or food in work area. Wash thoroughly before eating or smoking. Shower and change clothes at end of work shift. Do not wear contaminated clothing home. Do not blow dust off clothing with compressed air.

SPECIAL PRECAUTIONS/PROCEDURES/LABEL INSTRUCTIONS: Where airborne exposures may exceed the OSHA action level and or PEL, refer to the OSHA Lead Standard 1910.1025 or Arsenic Standard 29 CFR 1910.1018.

LABEL SIGNAL WORD: WARNING.

PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY PROTECTION: Where airborne exposures may exceed OSHA/ACGIH permissible air concentrations, the minimum respiratory protection recommended is a negative pressure air purifying respirator with cartridges that are NIOSH/MSHA approved against dust, fumes and mists having a TWA less than 0.05 mg/cu.m.

EYES AND FACE: Safety glasses recommended where the possibility of getting dust particles in eye exists.

OTHER CLOTHING AND EQUIPMENT: Full protective clothing is recommended for exposures that exceed permissible air concentrations. All contaminated clothing should be removed before leaving plant premises.

PHYSICAL DATA

SEE DATA PAGES FOR ADDITIONAL INFORMATION.

REACTIVITY DATA

STABILITY: Stable.

CONDITIONS TO AVOID: Not Applicable.

INCOMPATIBILITY (MATERIALS TO AVOID): None known.

HAZARDOUS DECOMPOSITION PRODUCTS: At temperatures above the melting point, metal oxide fumes may be evolved.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Not Applicable.

ENVIRONMENTAL

REGULATED BY DOT: This material is regulated as a Hazardous Substance because it contains reportable quantities of Arsenic (1#).

WASTE DISPOSAL METHODS (DISPOSER MUST COMPLY WITH FEDERAL, STATE, AND LOCAL DISPOSAL OR DISCHARGE LAWS): If hazardous under 40 CFR 261, Subpart B and C, material must be treated or disposed in a facility meeting the requirements of 40 CFR 264 or 265. If non-hazardous, material should be disposed in a facility meeting the requirements of 40 CFR 257.

RCRA STATUS OF UNUSED MATERIAL: If discarded in unaltered form, material should be tested to determine if it must be classified as a hazardous waste for disposal purposes. Under specific circumstances, application can be made to the EPA Administrator to have a particular waste designated non-hazardous.

40 CFR 261.

REFERENCES

PERMISSIBLE CONCENTRATION REFERENCES:

OSHA regulations for airborne contaminants 29 CFR 1910.1000.

ACGIH Threshold Limit Values for Chemical Substances.

HAZARD INFORMATION REFERENCES:

DOCUMENTATION OF THE THRESHOLD LIMIT VALUES, 5th Ed., ACGIH PATTY'S INDUSTRIAL HYGIENE AND TOXICOLOGY, Vol. 2A 3rd Rev. Ed., 1981.

NFPA FIRE PROTECTION GUIDE ON HAZARDOUS MATERIALS, 8th Ed., 1984.

HANDBOOK OF TOXIC AND HAZARDOUS CHEMICALS, Sittig, Marshall; 1981.

GENERAL:

HANDBOOK OF CHEMISTRY AND PHYSICS, 57th Ed., 1976-77, Weast, R.C., Editor,
CRC Inc.

ADDITIONAL INFORMATION

INFORMATION (HAZARDS, PRECAUTIONS, FIRST AID, ETC) IS ABBREVIATED. MORE
DETAILED INFORMATION IS CONTAINED IN REFERENCES FOUND IN REFERENCES SECTION:

No additional information.

SPECIAL NOTES

THIS MATERIAL SAFETY DATA SHEET IS OFFERED SOLELY FOR YOUR INFORMATION,
CONSIDERATION, AND INVESTIGATION. ASARCO INCORPORATED PROVIDES NO WARRANTIES,
EITHER EXPRESS OR IMPLIED, AND ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OR
COMPLETENESS OF THE DATA CONTAINED HEREIN.

End of MSDS

Material Safety Data Sheet

MSDS: 16

MSDS: 16 - LEAD BULLION

12/15/94

Status: Current

Revised: 5/05/93

Formula: Pb-Sb

Part Number: NOT GIVEN

Specification: NOT GIVEN

Keyword: NOT GIVEN

Synonyms:

NOT GIVEN

Stock Items: NOT GIVEN

Manufacturer

ASARCO, INC. (NEW YORK)

180 MAIDEN LANE

NEW YORK, NY 10038

Phone: 212-510-2000

Emergency: 415-777-2213

Supplier

ASARCO, INC. (NEW YORK)

180 MAIDEN LANE

NEW YORK, NY 10038

Phone: 212-510-2000

Emergency: 415-777-2213

Physical/Chemical Characteristics

Boiling Point NA

Melting Point ~ 662 $\frac{1}{2}$ F

NOT AVAILABLE.

~350'C.

Freezing Point NG

Pour Point NG

Softening Point NG

Specific Gravity NA

NOT AVAILABLE.

Vapor Pressure NA

NOT APPLICABLE.

Vapor Density NA

NOT APPLICABLE.

Percent Volatiles NA

NOT APPLICABLE.

Evaporation Rate NA

NOT APPLICABLE.

pH NA

NOT APPLICABLE.

Molecular Weight NA

NOT APPLICABLE.

Viscosity NG

Solubility in Water ... INSOLUBLE.

Odor/Appearance/Other Characteristics:

ODORLESS / SILVER-GRAY METAL; SOLID.

Fire and Explosion Data

Closed Cup Flash Pt. ..: NA

NOT APPLICABLE.

Open Cup Flash Point ..: NA

NOT APPLICABLE.

Fire Point NG

Auto Ignition NA

NOT APPLICABLE.

Lower Explosion Limit : NA

NOT APPLICABLE.

Upper Explosion Limit : NA

NOT APPLICABLE.

Shipping Regulations

UN/NA Number: NG

DOT Hazard Class: NG

Shipping Label: NOT GIVEN

Shipping Name: NOT GIVEN

Material Safety Data Sheet

MSDS: 16

MSDS: 16 - LEAD BULLION

Page 2

Prepared

Preparer's Name & Title: NOT GIVEN

Preparation Date: 3/20/87

Component(s):

LEAD

OSHA Pel: 0.05 mg/m3

ACGIH TLV: 0.15 mg/m3

STEL: NG ppm

Percent of Product: BT 96% 97%

CAS No.: 7439921

ANTIMONY

OSHA Pel: 0.5 mg/m3

ACGIH TLV: 0.5 mg/m3

STEL: NG ppm

Percent of Product: BT 2% 3%

CAS No.: 7440360

FOR ALL COMPONENTS: PERCENT BY WEIGHT.

OSHA Pel: NG ppm

ACGIH TLV: NG ppm

STEL: NG ppm

Percent of Product: NG

CAS No.: NOT GIVEN

Text Section(s)

GENERAL INFORMATION

SEE DATA PAGES FOR ADDITIONAL INFORMATION.

TRADE NAME(COMMON NAME OR SYNONYM): Lead Bullion.

ASARCO PRODUCT CODE #: NOT GIVEN.

CHEMICAL NAME: Lead-Antimony Alloy.

MANUFACTURER'S NAME AND ADDRESS:

ASARCO
180 MAIDEN LANE
NEW YORK, NEW YORK 10038

TELEPHONE: 212-510-2000.

Material Safety Data Sheet

MSDS: 16

MSDS: 16 - LEAD BULLION

Page 3

ISSUED DATE: 1/2/86.

CONTACT:

GENERAL INFORMATION-DEPARTMENT OF ENVIRONMENTAL SCIENCES:

DAY: 801-262-2459.

NIGHT: 801-943-1754.

FIRST AID INFORMATION: (DR. C.H. HINE):

DAY: 415-777-2213.

NIGHT: 415-777-2214.

TRANSPORTATION EMERGENCIES:

CHEMTREC: 800-424-9300.

HAZARDOUS INGREDIENTS

SEE COMPONENT PAGE(S) FOR ADDITIONAL INFORMATION.

PERMISSIBLE AIR CONCENTRATION: OSHA.

FIRST AID MEASURES

HAZARDS INFORMATION

INHALATION: Remove from exposure; place individual under care of physician.

INGESTION: Induce vomiting in conscious individual and call a physician.

SKIN: Wash thoroughly with soap and water.

EYES: Immediately flush eyes with large amounts of water.

HAZARDS INFORMATION

SEE DATA PAGES FOR ADDITIONAL INFORMATION.